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LECTURES BY M. DE BLAINVILLE ON COMPARATIVE OSTEOLOGY.

THE

COMPARATIVE OSTEOGRAPHY

OF THE

SKELETON AND DENTAR SYSTEM,

IN THE FIVE CLASSES OF

VERTEBRAL ANIMALS,

RECENT AND FOSSIL.

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WITH GRAPHIC DELINEATIONS BY M. WERNER.

EDITED (FROM THE FRENCH) AND

ADDITIONALLY ILLUSTRATED

WITH NUMEROUS NOTES, OBSERVATIONS, AND DRAWINGS,

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THE MAMMALIA—(*continued*).

In this great class of animals, so closely throughout resembling man in structure, almost every kind of bone, or solid part, that exists in any animal structure, *may* be found, assembled at one and the same time, although rarely; so that even on *this* account, as well as on other accounts, the mammalia merit a place at the head of the osteozoaria, for these are evidently the animals which possess the greatest number of bones. We find, in fact, in them, besides the bones (properly so called), and the osteïdes—the dermos, the phaneros, the enderos, and the bulbos; so that there are only the petros which do not exist in the mammalia, at least in a solid form, for the petros are found in a subgelatinous state.

The osseous system in the mammalia is distinguished from that system in the other classes of vertebrate animals, by being formed of matter, the inorganic portion of which is very considerable compared with the quantity of organic substance that it contains, and by the circumstance that the organic portion is found to remain long after the death of the animal, no doubt in consequence of its intimate combination with the inorganic; for we know that the fossil bones found in the quarries of Montmartre were blackened when Vauquelin exposed them to the action of fire.

The structure of the osseous system, respecting which anatomists are far from being agreed—at least, so far as regards its microscopic observation—is in a great part cellular in the short bones, and in the extremities of the long bones. And these cellules are always filled with medulla; but at the circumference of the long bones it condenses remarkably, becoming like ivory, with a fracture almost conchoidal, and a considerable specific gravity, whilst in the middle and centre of the bone, these little cells dilate, ramify, and disappear, and a fistulous cavity, filled with a cylinder of marrow, is the result.

The osseous system of the mammalia has, generally speaking, a greater density than has that of the other four classes of the osteozoaria.

In the mammalia the ossification proceeds in a sufficiently rapid manner, although much less rapidly than in birds; and the union of the epiphysis with the shaft, in the long bones, although well marked, is not so rapid as in birds.

As in most of the mammalia the muscular actions are often very intense, not only for the general transportation of the body from place to place, but also for some special locomotions, which, demanding considerable efforts, it follows that the processes, crests, and lines of muscular insertion, are generally much better marked in the mammalia than in the other classes of the vertebrata. The bones also are more angular, are more acted upon by the muscles, as we may say. The articular surfaces, too, are deeper, more dove-tailed, and, consequently, the articulations are closer.

In the mammalia, also, the influence of age, sex, and favourable or unfavourable circumstances, shows itself in a more striking manner, not only as regards the development of the whole skeleton, but also by differences which it produces in the proportions of certain parts; and, above all, in the head, which, in consequence of the changes that

take place in the dentar system, in the jaws, presents the most striking differential modifications. In fact, with the elongation of the maxillæ, there harmonizes a concordant change in the zygomatic arch, the temporal fossæ, and the crests which extend them in all directions. Under greater activity of life, and a more sustained respiration, the frontal sinuses, and, consequently, the superciliary arches, become more developed. But while the head and all its parts thus experience modifications which add to their strength, the same influences re-act upon the vertebræ and their processes, and the ribs, a re-action which extends even to the bones of the extremities, which become stronger, and proportionally shorter; for it is worthy of remark, that in the increase of the skeleton and its parts, the dimensions in breadth increase in a greater proportion than those in length.

The number of bones, or portions of the skeleton, is never sufficiently constant as to be what may be termed strictly *classical*, unless we confine our consideration to a limited part, as, for example, to the cervical vertebræ, which are seven in number; or the phalanges of the fingers, which amount to three; and even this rate is not absolutely constant.

It is the same with regard to the *disposition* of the bones in the construction of the skeleton; but there seems to be something exclusive and peculiar to the mammalia in the form and manner in which the sternal portions are placed with respect to each other.

As to the form of each particular bone, and the manner in which the bones are grouped and articulated, very few of them fail to offer some point which is altogether characteristic, as may easily be shown by reviewing them in a somewhat less scientific order than that which is indicated above. Without paying attention to the obvious distinction between median parts and appendages, we shall speak of the appendages immediately after noticing the exposition of those median portions to which they belong.

*The Cephalic Vertebræ**.—The first has its body formed like a plough-share, or triangular plate, more or less advanced, and its osseous arch is formed by a pair of nasal bones, placed in contact with each other by their inner margin in the median line. There is no exception to this arrangement in the mammalia.

The second has a considerable frontal arch, as well as the third and fourth, or last, with which the second portion of the vertebral column articulates by two oval condyles, diverging, more or less from each other, but never united into one.

With respect to the bodies of the three vertebræ which are *exclusively cranial*, they each increase in size, from the first to the last, forming the basis of the cranium, expanding more or less on each, and, by ascending, reaching the corresponding arch, and perforated in different ways for the passage of four groups of cerebral nerves.

The Jaws.—Of the two pairs of appendages of the cranium thus called, the anterior has always at least its root inferiorly and posteriorly, and the pterygoid bone forming it is by no means large, doubling, on its inner face, a descending process of the posterior sphenoid, or body of the third vertebræ, known by the name of the external pterygoid process. This peculiarity of the posterior palatine belongs exclusively to the mammalia. Of the three portions which constitute the body (meaning the body of the appendages or upper jaw) always firmly and immoveably joined to the head, the posterior (pterygoid process) always very small, never carries any teeth, and the anterior or premaxillary portion is always smaller than the maxillary, and its ascending branch is never united to that of the opposite side at the median line.

The other pair of cephalic appendages, or the lower jaw, often named *mandible*, is always, and at every age, completely indivisible. This, also, is peculiar to the mammalia. Of its two branches, the horizontal alone carries teeth, and the vertical is divided generally into three processes; an inferior, called *angula;* a superior, *coronoid;* and a middle, called *articular;* having, in fact, a condyle differently formed for the joint.

This mandible, or jaw, is united to the sides of the cranium by means of the temporal bone, immoveable, applied against the bones of the arch of the second, third, and sometimes even the fourth cephalic vertebræ, comprising, and joined inferiorly to it, the external auditory canal, the tympanic cavity (containing also the ossicula auditus) which belongs also to this appendage, and likewise an irregularly shaped extremely hard bone, named, on that account, the *rocky* bone, which in my *System of Anatomy*, I consider merely to be the osseous envelop of the otic bulb, and grouped with the solid parts that enter into the composition of the sclerotic of certain osteozoaria, composes our third kind of bones; but which, for convenience of description, we include with those of the head.

The Cervical, Dorsal, Lumbar, Sacral, and Coccygeal Vertebræ.

The complete vertebræ, in the trunk of the mammalia, have, as a common character, their union throughout the whole extent of the body, by continuity of substance, and, in the dorsal arch, a notch, more or less deep, on each side of the peduncles, forming the foramina conjugalia; articular processes, four in number, giving rise to a moveable joint, and often a pair of transverse processes, and a spinal or spinous dorsal process.

* See note by Dr. Knox, at page 191.

Moreover, it is not always true that the bodies of the vertebræ in the mammalia have, as characteristic marks, plain terminating surfaces. They are sometimes convex anteriorly, concave posteriorly, as in the cervical vertebræ of many ruminants. And, moreover, many reptiles have, certainly, flat vertebræ, and certain fishes have them convexo-concave, with a mobility which is dependent on the presence of synovia.

In all the mammalia, the distinction of the vertebræ into cervical, dorsal, lumbar, sacral, and coccygeal, is almost always easy, excepting when the posterior extremities are wanting, as in the cetacea, each group having characters that are peculiar to it, and even although the last of each kind passes insensibly into the first of the following group.

The *cervical* vertebræ are never more than, nor ever under, seven, with one exception, in which there is a greater number, and perhaps one in which there is a less.

The two first are named, *atlas* and *axis*; the first so called, because it supports the head; the second, because it is upon it that the atlas turns, carrying the head along with it; they are easily distinguished, the atlas by the notch in the body, the absence of a spinous process, and wing-formed dilatations of the transverse processes; and the axis, by the elevation of the body into an odontoid process, the expansion of the spinous process into a large crest, and the absence of transverse processes.

The four cervical vertebræ which follow these have, as a common character, the base of the transverse process pierced, with a foramen for the passage of the vertebral artery.*

The seventh vertebra is characterised by not having this peculiarity, which causes it to resemble the dorsal vertebræ; and the more so, that, by the projection of its spinous process, it is sometimes named "vertebra *pro-eminence*."†

The *dorsal* vertebræ, whatever be their number, have, as a differential character (for the articulation of the heads of the ribs), a small articular facette at the superior angle of the body, both anteriorly and posteriorly, for all the anterior vertebræ, but only anteriorly for the two or three last.

At first the bodies of these vertebræ are large, they next diminish, and, finally, they increase in proportion as they approach the lumbar.

They all have, in addition, the laminæ of the arches more or less broad, and imbricated, the articular surfaces well marked, and the anterior a little imbricated, and more or less tubercular externally; the spinous processes, in general very elevated, more or less sloping backwards, and either standing upright or inclining the opposite way; the transverse processes having inferiorly an articular facette at their extremity, and above tubercles, for the insertion of muscles.

The *lumbar* vertebræ may always be distinguished from the preceding by the following characters:—The absence of articular facettes on the body; the size of the body; the laminæ not overlapping each other; the articular processes having a disposition to interlock, by the development of a sub-process behind; and by the size of the spinous processes, which are broad and vertical, or slope forwards, as do the transverse horizontal processes.

The *sacral* vertebræ (*see second engraving, at page* 191), variable in number, are distinguished by the osseous union of their bodies, and of their enlarged and thickened transverse processes, so as to form what is called the *sacrum*, the first vertebra of which resembles the contiguous lumbar, and the last the first coccygeal. By their union there results a double series of foramina, anteriorly and posteriorly, a series of spinous processes, which may either form or not a median crest, and occasionally on each side a series of tubercles, not so distinct, being the remains of the articular processes.

The *coccygeal*, or caudal vertebræ, which vary much more in number in the mammalia than do the preceding kinds, may be divided into *three* groups. Those of the first much resemble the last sacral vertebræ. They have almost all the characters of true ver-

* In human anatomy, we do not admit of the absence of the transverse processes of the second cervical vertebræ; and we may remark generally, that the descriptive anatomy of the human skeleton is, of necessity, given with far more precision than is required in a work of this kind. When we come to treat of the primates, we shall take care to point out such differences as bear on the general object of M. De Blainville's work.—*R. K.*

† The absence of a foramen in the basis of the transverse process of the seventh cervical vertebra can scarcely be said to be characteristic. On the contrary, it is present in a great number of the mammalia, and is almost constantly so in man, the exceptions being extremely rare. Its absence, on the other hand, seems just as constant in numbers of the mammalia as in many of the ruminant, the camel, the elephant, the carnivora, and in most of the primates. It may be admitted, however, that, even when present, the vertebral artery does not pass through it. In man it gives passage to the vertebral vein. With respect to the transverse process of the second cervical vertebra, mentioned by De Blainville as being always absent, it may be remarked, that it is *occasionally* absent, as in the camel, but that it is just as often present in others of the mammalia, although perhaps not so fully developed.—*R. K.*

tebræ; that is, an osseous arch, with two parts of the articular processes, a spinous process, and transverse processes.

Those of the next group have the osseous arch much less extended, and the transverse processes but little marked.

Finally, those of the last group, which constitute the greater part of the tail, and which terminate it, are reduced to the mere bodies of the vertebræ, which elongates, and becomes attenuated, with four processes, equally or unequally crossed.

The Sternebræ. The Manubrium.

The sternebræ exist in an evident manner, and form a series only in this class of the osteozoaria.

The subgutteral portion is formed only of a single piece, very differently formed, to each extremity of which are joined two pairs of appendages or horns of different proportions, the one anterior, which ascends towards, and has a varying relation to the cranium; the other posterior, in connection with the laryngeal apparatus.

The thoracic portion of the sternebræ, situated at a variable distance from the first, according to the length of the neck, forms, by the union of the separate bones composing it (which also vary in number) what anatomists have called the *sternum*.

Each composing piece or intermediate sternebra (points of ossification of the body of the sternum of the human anatomist) is more or less contracted in the middle, and consequently enlarged at the extremities, where they articulate with each other, offering an articular notch at each angle.

With regard to the two terminal portions, the anterior, or manubrium, has its anterior part very different from its posterior, whilst, on the contrary, it is exactly the opposite with respect to the posterior part of the sternebræ, or the ensiform process, in which it is the posterior part, which is very diversified, having sometimes the form of a Roman sword, and hence the name *xiphoid*.*

The Ribs.

The appendages, or ribs, which, in the mammalia, articulate with both series of median portions (vertebræ and sternebræ), are very variable, as well in form as in number.

The anterior, which are always true, or sternal (since they constantly unite with the appendages of the sternebræ), articulate between two vertebræ by means of an articular head, and with the transverse process of the following vertebra by an articular tubercle. Between these two parts there is the neck, and, finally, a body more or less compressed, more or less curved, whose extremity is united uninterruptedly with the cartilaginous appendage of the sternum.

The posterior ribs, or the a-sternal, have also a head, and an articular tubercle, like the anterior; but the cartilaginous portion, which terminates them, whatever be its length, is always free or floating, neither joining the sternum nor that of the opposite side, and in the two or three last the articular head is often united only to a single vertebra.

The Bones of the Upper or Anterior Limbs.

The free appendages or limbs, in the mammalia, are never fewer than one pair; and even in those cases where the posterior limbs are wanting externally, these animals have a rudimentary ischiatic bone, suspended in the flesh by a long sacro-ischiatic ligament, and into which bone is inserted, as usual, the ischio-cavernosi of the exciting organ.

The anterior limbs of the mammalia, always complete, always formed of four normal parts, have the first, or shoulder, formed of a scapula only, or of a scapula and clavicle, or finally (in the last sub-class exclusively) of a scapula, a clavicle, and a pre-ischion; but in all these cases the osseous girdle which these pieces form is always free superiorly, and never united immediately by its inferior termination to the branch of the opposite side.

The *scapula*, in all the animals of this class, is always a large, flat, and thin bone, convex externally, concave internally, of a form that is habitually triangular, with an oval or rounded articular cavity at its sternal or inferior angle, which is also the thickest; and a tubercle, more or less prominent, called *coracoide*, where the cephalic margin terminates. A plate, in the form of a crest, divides the external surface into a fossa supra, and an infra spinata, and is sometimes prolonged into a spine, or process curved externally to the articulation. This is named the *acromion*, and with it the clavicle (when present) is articulated.

The concave or inner surface of the scapula is called the *fossa sub-scapularis*.

The *clavicle* of the mammalia, when complete, is a long cylindrical and more or less curved bone, proceeding transversely between the first sternebra, to which it is sometimes immediately articulated, and the acromial termination of the scapular spine. But sometimes this bone is entirely suspended amongst the soft parts, reaching neither the sternum nor the scapula, and varying in length until it entirely disappears.

The *pre-ischion* exists in only two or three of the last species of mammalia. I shall

* Although the meaning of the author be quite obvious, it may yet be useful, as the passage is involved with technicalities, to remark, that the more irregular portions in each terminal extremity of the sternum look opposite ways, viz., that of the manubrium towards the head, that of the ensiform process towards the pelvis.—*R. K.*

therefore only remark, with regard to it, that (as in most of the oviparous osteozoaria) it is a bone which by one extremity enters into the composition of the shoulder-joint, and by the other rests on the sternum.

The *humerus*, in the mammalia, may be distinguished very readily from that of the other classes, by its crests, and its angles being much better marked; by the rounded form of its scapular extremity; by the larger and smaller tuberosities for the insertion of muscles; by the elevation, projection, and greater extent of the surfaces for the attachment of the deltoid and great pectoral muscles, descending from the larger tuberosity; also by the crests for the insertion of the muscles of the hand, both externally and internally of the inferior articular surface, and which, moreover, shows marks of being much more acted on than is the humerus of other animals.

The same remarks may almost be made respecting the bones of the forearm, even when the ulna is reduced to its superior head, or olecronon process; that is to say, the crests, angles, processes for muscular insertion, and the articular surfaces, are always best marked in the bones of the mammalia.

The *radius* is always complete, articulating more or less fully with the humerus by a head, which, from being circular, becomes more and more transverse and ginglimoidal, and articulating with the carpus by an extent of surface, having a direct relation to the position of the hand, as it assumes more and more the forced pronation which is peculiar to the quadruped.

The *ulna* follows the degradation of the hand, and, at first complete, placed by the side of the radius, which rotates upon it, extending from the humerus to the carpus, and articulated with both, it passes more and more backwards, occupying no more than the posterior part of the humoral articulation (elbow joint), and finishing by being reduced to a mere process for the insertion of the triceps, extensor (the olecranon), and then ceasing to have any connection with the carpus.

The *carpus*, by which commences the hand, is always composed, even when most simple, of two rows of small many-formed bones, the one brachial, the other digital; the first sometimes composed of four, and even of five bones, which are, counting from within, outwards,* the scaphoid (or navicular), the intermediate, the semilunar, the triquetrum (cuniform), and the pisiforme. The first and the third (second?) articulating with the radius, the third with the ulna, and the fourth out of the row; but sometimes there are only three, the pisiforme included.*

The second row is formed of not more than four bones, named (counting from the radial to the ulnar side) trapezium, trapezoides, magnum, and kneeformed; the first for the thumb, the second for the index, the third for the median, and the fourth for the ring and little fingers. But the row may be reduced to three bones when the fingers are themselves reduced to this number, whether when complete or rudimentary.

The *metacarpus* of the mammalia is almost always formed of bones of considerable length; in number five, four, three, two, and even one, at least complete. These bones, placed side by side, have very variable proportions in relation to the fingers which they support. Their carpal extremity is flat, or, at all events, not deeply furrowed. Their digital extremity presents a rounded head.

The *phalanges* of the fingers are constantly, with two exceptions (viz., that of the swimming-paw of the cetacea and the wing of the bat), three in number, for all the fingers, excepting the thumb, which has only two. And these phalanges vary their proportions a little, although generally the first is the longest, and the third the shortest.—*(See note at page 192.)*

Of these the most important is the third, or distal, which supports the nail, and hence is called the *nail bone*.

The first phalanx in all the mammalia, commences by a rounded cavity, and terminates by a pulley.

The second commences by a counter pulley, that is, by a surface which is adapted

* In the human nomenclature, in counting the bones from the radial to the ulnar side of the arm, we always consider that we are reckoning them from *without inwards*; but M. De Blainville no doubt has in view, in the above enumeration, rather the quadruped position in forced pronation, and, therefore, his nomenclature is precisely the reverse of the human. It will be preferable, therefore, to use the phrases *radial* and *ulnar*, which admit of no equivoque.—*R.K.*

* With respect to this passage, I would merely take the liberty of reminding the reader that, regarding man as the type, the first and second bones of the carpus, meaning thereby the scaphoid and semilunar (setting aside all consideration of any *intermediate* bone), articulate *directly* with the radius. On the other hand, the third bone of the human carpus, that is the cuniform (os triquetrum, multangula, or pyramidal) does not articulate directly with the ulna, but indirectly; a very remarkable fibro-cartilage and synovial apparatus being interposed. It may be readily conceived how all this alters when the hand, in a prone state, becomes a mere instrument of support, as in the quadruped; and how varied, from causes in a great measure as yet unknown to the physiologist, the carpal bones become in the descending series of the mammalia.

to the distal end of the first, and terminates at its other extremity, by a distinct pulley.

Finally, every nail bone begins by a counter pulley, which is more or less oblique, and terminates by thinning away, according to the form of the nail.

The Pelvis.

The pelvis, the osseous girdle that is connected with the posterior limbs, is at the least as characteristic in the mammalia as is the anterior osseous girdle, not only as a whole, but also in each of the three or four bones composing it.

In fact, with about a single exception, this osseous girdle joins by its upper extremity the vertebral column, by means of an articulation with the sacrum. This joint being more or less immoveable, inferiorly, it forms, with the opposite bone, a symphysis called *pubic*, with one or two exceptions, where the symphysis remain separate.

Of the three bones composing each half of the girdle, and which unite very early to form the cotyloid cavity, the most important is the *ilcon*, and at the same time it is the largest. Spread out, superiorly, into somewhat of the form of a fan, and presenting two aspects more or less excavated (the external and internal iliac fossæ), it contracts at about the middle, but dilating again, forms the anterior and superior half of the cotyloid cavity. Of its two principal margins, the superior, more or less rugous, limits the internal surface of the articulations with the sacrum; and the inferior, or anterior, commences by an angle which is called the anterior and superior spine, finishing above, or anterior to the cotyloid cavity, by a tubercle for the insertion of muscles.

The second bone (pubis) is that which, in the median line, joins its fellow and constitutes the symphysis pubis. By its other extremity, it unites freely with the ilion, to assist in forming the cotyloid cavity.

Finally, the third bone, or ischion, situated posteriorly, and of a horse-shoe form, interposes between the two other branches, opening anteriorly, the one ventral, in continuation with the pubes, the other dorsal, completing the cotyloid cavity; whilst the angle of junction, often thickened and enlarged, is named the *ischiatic tuberosity*.

The Bones of the Lower Extremities.

The *femur*, in the mammalia, like the humerus, is extremely well marked. It presents a spherical head, a neck, varying in length and in obliquity, two tuberosities for muscular insertions (the greater and small trochanter), with a depression behind the larger, called digital cavity; a line for muscular insertions running along the body of the femur (linea aspera); and, finally, two articular condyles, inferiorly, separated from each other by a pulley in front, upon which plays the rotula, or osteide (sesamoid) bone of the extensor muscles of the leg.

The leg, in the mammalia, is always formed of two bones, but the fibula is sometimes reduced to one or other of its extremities.

The *tibia*, always the principal bone of the leg, corresponding with the radius of the forearm, is generally three sided, and somewhat rounded with reference to its length. Its femoral extremity, much enlarged, presents a counter pulley, constituting a large articular surface. The excavations are shallow, the ridge not very projecting. There is another external articular facette, for the head of the fibula. The tarsal extremity, generally narrower than the femoral end, presents also a counter pulley, most generally oblique, the internal groove deeper than the outer by all the addition of the inner edge, constituting the malleolus internus; there is a small articular facette for the fibula upon the outer aspect of this, the tarsal end of the tibia.

The *fibula*, in the mammalia, is almost always, when complete, a thin, elongated, three-sided bone, enlarged above and below; the upper enlargement, or head, articulating with the tibia obliquely; the inferior articulating also with this bone, but projecting beyond it to form the malleolus externus.

The foot, in the mammalia, is, like the hand, always formed of three parts.

The *tarsus*, into which there enters at the most seven bones, disposed in two rows; an internal, or superior; an external, or inferior.

In the first row, composed of three bones, there is the *astragalus*, which, together with the bones of the leg, constitutes alone the ankle joint; so that the tibial aspect of this bone is entirely occupied by an extensive pulley, whilst the tarsal surface, more complicated, presents articular surfaces, variously formed, for the calcanum and scaphoid.

The *calcaneum*, generally the largest bone of the tarsus, because it represents two of the carpus, is of a peculiar form in the mammalia; since, besides the superior articular facettes, to support the astragalus, it extends forward into a large process, truncated, or squared off, to articulate with the cuboid of the second row; and another process, stronger and more enlarged, extends backwards, projecting beyond the axis of the junction of the limb and foot, and intended for muscular insertions.

The *scaphoid*, or third bone of the metatarsus, is also a very characteristic bone in the foot of the mammalia. Its hollowed surface articulates with the astragalus; and the convex surface, divided into three facettes, corresponds with as many bones of the second row.

There are never more than four bones in the second row of the tarsus; in this respect

it resembles the hand; but the number may be reduced to three.

There are, first, the three cuneiform bones, the first, second, and third, and named *cuneiform*, from their shape; in man their proportion and figure vary considerably. The feril, upon which rests the great toe, has articular facettes on three sides only. The two others show facettes on four aspects.

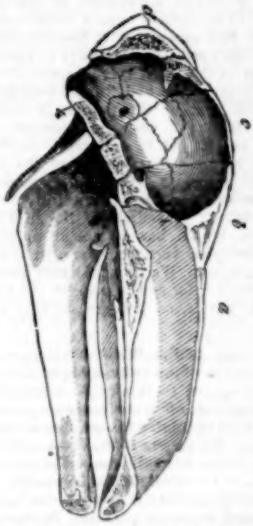
The last bone of the row, the *cuboid*, articulates with the calcaneum by a broad facette, posteriorly, an internal facette for the cuneiform bone, and one or two anteriorly, for one or two toes. The external surface has no facettes, neither have the superior and inferior aspects. An oblique groove, externally, characterises this bone.

The two remaining parts of the foot so strongly resemble the analogous structure in the hand, that it is often difficult, in certain mammalia, to say which is which. We may remark, however, that the proximal end of the *metatarsal* bones is always sensibly flatter than that of the metacarpal; that the fifth bone, when it exists, has its external tuberosity more projecting, and that the nail bones are less curved.

ADDITIONAL NOTES BY DR. KNOX.

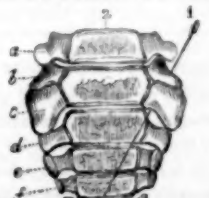
(*See page* 186).—The merely human anatomist and physiologist must, we feel assured, be not a little surprised at the dogmatic manner in which M. De Blainville uses the term *cephalic vertebræ*. Amongst some hundreds of sections of crania in our museum, we have selected that of the fœtal horse (*see woodcut*) as showing in, perhaps, the greatest perfection, the undoubted fact of the cranium being merely a prolongation, as it were, of the spinal column.

Should the teacher take the horse's head at an early period, and macerate the bones, he will find the bodies of the *cephalic vertebræ* in a very different condition from their state in man, or, indeed, in many quadrupeds. Should it be of the horse, at or before birth, the *first* will be entirely in a state of cartilage, and, consequently, not even existing as a bone. Should ossification have commenced, then the *second* cephalic vertebra (or anterior sphenoid) will have united to it, so that he may have the optic nerve passing through foramina, in what he considers to be the æthnoid bone. Now, this mistake we have ourselves witnessed. The *third* cephalic vertebra (posterior sphenoid) will, at the same time, in all probability, have partially united with the *fourth* (the basilar process of the occipital bone). In the human subject it would appear, from a preparation of a fœtus now before us, that the bodies of these cephalic vertebræ follow a very similar law in their osteogeny. We observe distinct centres of ossification for the fourth and third, but no vestige of ossific deposit in the cartilaginous parenchyma of the *second*, or anterior sphenoid, and the first or ethmoid. As the person advances in years, say at about the age of eight, the second and third anterior and posterior sphenoid unite, and constitute the *sphenoid bone* of the human anatomist, a bone which we have shown can *never* be found as a separate and distinct bone in the horse.



(*Engraving reduced to* $\frac{1}{4}$ *the natural size.*)

Vertical section viewed in exact profile of the cranium and jaws of a fœtal horse. The saw was carried in this case $\frac{1}{10}$ to the right of the mesial line, and hence it will be observed that the vomer and cartilaginous septum of the nose are both entire. 1. Ethmoid (first cephalic vertebræ); 2. Anterior sphenoid (second cephalic vertebra); 3. Posterior sphenoid (third cephalic vertebra); 4. Basilar process of occipital (fourth cephalic vertebra). *a*. Nasal; *b*. Frontal; *c*. Parietal; *d*. Occipital, composing the osseous arches of the cephalic vertebræ.—*R. K.*



(*Engraving reduced one-half the natural size.*

(*See page* 187).—Last lumbar and five sacral vertebræ of a child viewed from before. 1. Probe traversing the first left anterior sacral foramen; 2. Bodies of the vertebræ; *a*, pedicle and processes of the last lumbar vertebra, not yet united to the body; *b*, pedicle of the first sacral; *c*, its costal appendage; *d*, costal appendage of the second sacral. (The pedicle cannot be brought into view in this aspect, as it lies immediately behind the costal appendage); *e*, costal appendage of the third sacral, which does not reach or touch the body of the vertebra, and thus the root of the pedicle is distinctly again visible; *f*, costal appendage of the fourth sacral. It is extremely small, and merely conceals that portion of the pedicle and its processes which corresponds with the transverse processes in a fully-developed vertebra; *g*, pedicle of the fifth sacral vertebra, which has no costal appendage. The coccygeal vertebræ were, in this case, cartilaginous. We thus find that the facies auricularis is formed in man of the truncated extremities, as it were, of four ribs.—*R. K.*

(*See page* 189).—With every respect for the opinions of the first zoologist of the day, I feel disposed to think that neither the bat nor the cetacea offers any real exception to the law which regulates the number of the phalanges of the fingers in the class called *mammalia*. The normal number of these phalanges, in the adult animal, is usually three; but as each phalanx is composed of three distinct and separate portions, in the young animal, it must necessarily happen that there will exist animals of this class in which the number of the phalanges in each finger may amount to nine, the two epiphysis, and the body of each phalynx remaining distinct. Now this happens, to a certain extent, as we shall afterwards show, in the fingers of the cetacea. The hand of the dugong (an adult specimen) now before me, shows in each phalanx three distinct bones, which, in all probability, never unite with each other by any ossific deposit. The *typical number*, then, in the fingers of the mammalia, will be *nine bones* for each finger, with the exception of the thumb, in which there will be only six.

Flexible Ivory Bougies.—M. Charriere, of Paris, has recently prepared some flexible ivory bougies, made by extracting the calcareous matter. These bougies can be prepared in a few days, and when dry, the desired curve can be given to them, which curve is retained. The drier they are when introduced, the more they expand without loosing their firmness.

ARGUMENTS ON SOME POINTS OF THE *PHYSIOLOGY OF THE NERVOUS SYSTEM*, WITH SOME REMARKS UPON THE OPINIONS OF DR. MARSHALL HALL, MR. GRAINGER, AND DR. CARPENTER;

BY

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[Read at the Meeting of the Medical and Surgical Society of Newcastle, 30th April, 1839.]

I think it right to observe, *in limine*, that a considerable portion of the following paper was written before I had seen the paper of Dr. Carpenter, published in the *Edinburgh Med. & Sur. Journal*, in 1837, and that I consulted the paper of Dr. M. Hall, in the *Philosophical Transactions*, and his lectures, but had not an opportunity of referring to his Essay of 1837, published in 4to.

I have just received the *Thesis* of Dr. Carpenter, but I have not had time to do more than read his introductory remarks, and his "*resumé*."

He now abandons the opinions expressed by him in his paper of 1837, and agrees with Dr. Marshall Hall as to the mode of production of voluntary motion. (See his "*resumé*," Nos. 11 and 12).

The principal portion of his *Thesis* appears to be a very excellent compilation, giving the physiology of the nervous system from various authors, and especially from Leuret's recent work; but I do not perceive that he has pointed out the reasoning which has led to his change of opinion; and I believe his *Thesis* does not contain anything which would lead me to alter the conclusions I have drawn in the following paper.*

In alluding to Dr. Carpenter's opinions I allude always to those put forward in 1837.

Oct. 1839. M. H. L.

In the present paper I propose to consider principally *excited motion* and *voluntary motion*, with the view of ascertaining the *seat* of these functions—in fact, of determining the *source* of power.

It will be useful to recite, in the first place, the conclusions at which Dr. Marshall Hall has arrived, and for this purpose I shall make use of the words of Mr. Grainger's excellent *Treatise on the Spinal Cord*, in which they are given very *concisely* and *correctly*. These are

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* We have taken the liberty of altering Dr. Lynch's communication from that of a paper read before a society to that of a memoir destined for publication.

1. That there exists a true spinal cord, physiologically and anatomically distinct from that portion of the cord which is strictly an appendage of the brain.

2. That there is a system of nerves physiologically distinct from the sentient and voluntary nerves, called excitomotory nerves, consisting of *incident* nerves, which arise from the skin and certain mucous membranes, and of reflex nerves, which end in the voluntary muscles. These parts *collectively*, that is to say, the true spinal cord and the excitomotory nerves, constitute what Dr. Hall designates the true spinal system.

3. That currents of nervous influence may be excited, passing *upwards* from the skin and downwards to the muscles, through the medium of the incident and reflex nervous fibres.

4. That the true spinal system presides over ingestion and exclusion, over retention and egestion, and consequently that its influence is exerted upon the muscles which belong to the entrances and the outlets of the animal frame, or, in other words, upon the sphincters, the muscles of deglutition and of respiration.

5. That the true spinal system maintains the tone of the entire muscular system.

Mr. Grainger adds, that, before Dr. Hall's views were made known, the general opinion was that sensation and volition are properties of the medulla oblongata, and that these functions remain after the loss of the brain.

The position which should next be established, is "that the *grey substance is the seat of power*, whether *that power* give rise to *excited motion*, to *thought*, to *respiration*, or *deglutition*, to the *movement of a limb*, or the *electric shock* of a torpedo." As I know of no author who has more satisfactorily than Mr. Grainger stated the arguments in favour of this proposition, I shall quote his words.

"—— *the grey matter increases in quantity in the exact ratio of the nervous energy.* We learn from a comparative examination of the brain, that the intellectual operations become diversified and energetic in proportion as the *grey substance* is accumulated; and it is in this respect especially, more than in that of relative volume, that the brains of the lower animals differ when compared with each other or with the human cerebrum, the great peculiarity of which consists of the very large proportion of its grey matter, when contrasted with the nerves attached to its base. A very accurate test of the intelligence possessed by different animals, or even by different individuals of the human species, is thus afforded by the development of the convolutions, or, in other words, of the grey substance. * * * But the condition of the cerebro-spinal axis at the time of birth, affords perhaps the most satisfactory evidence on this point. At that period the grey matter of the cerebrum is well known to be very defective, so much so indeed, that the convolutions are, as it were, in the first stage of their formation, being only marked out by superficial fissures, almost confined to the surface of the brain; whilst at this identical period, the spinal cord, owing to the defective development of its fibrous part (which, as will subsequently be shown, is allied with the exercise of sensation and volition), contains a larger quantity proportionally of grey matter than it does in the adult; in consequence of which, according to the remark of Professor Arnold, *that matter* which in the *adult* is situated so deeply in the *interior*, approaches much nearer to the surface. Now, at this particular time, *the true* cerebral functions, consisting of the *intellectual* faculties, are almost entirely, if not for a brief period, totally wanting, whilst the true spinal functions are in full activity. There cannot be," &c. Again Mr. Grainger says "that Professor Tiedemann, in his valuable work on the development of the brain, has incidentally mentioned a fact which bears on this inquiry. He has found that, in the torpedo, there is a mass of grey nervous substance, placed in connection with the fifth and eighth nerves, supplying the electrical organs, larger in size than the cerebellum itself, whilst in the common state no such mass exists."

The great vascularity of the grey matter, and its not being found in those parts of the nervous system which are acknowledged to be mere conductors, may be adduced in support of "the same assertion."

Having now maintained the assertion as to the source of *power, without* reference to the *specific results* of that power, I shall next proceed to enumerate the conclusions drawn by Mr. Grainger from his anatomical researches.

"1. The grey substance presents two lateral crescents, with a band of the same substance uniting them anteriorly. The grey matter encloses in its centre some of the white substance.

"2. The grey matter of the vertebral part of the spinal cord is uninterrupted in its passage from the cord, through the medulla oblongata, the pons varolii, the optic thalami, and the corpora striata, on the outer surface of which it ceases; never, in this direction, becoming continuous with the grey matter of the convolutions. The grey matter of the crus cerebri joins that of the pons tarini, tuber cinereum, locus perforatus anticus, and thus the convolutions of the anterior and middle lobes of the brain.

"3. The *optic tubercles* are in connection with the cord *through the optic thalami*, to which they are joined by the *grey* substance.

"4. Now, as to the nerves: Gall was the first who distinctly announced that *all* the fibres of the nerves are countinuous with the *grey* matter of the cord.

"Mr. Mayo, has stated (doubtfully, however,) that the roots of the nerves have a

double connection with the grey and white substances, but is positive as to their joining the *grey*.

"Keuffel, Ollivier, Weber, Arnold, and J. Mayo, state that the nervous fibres may be followed into the grey substance of the cord; (such are the authorities advanced by Mr. Grainger in favour of the roots of the nerves entering the grey matter of the spinal cord.)

"The dissections performed with great care by Mr. G. himself, lead him to conclude *positively*, that a portion of *both* roots goes to the cineritious substance; but he is inclined to make a further assertion, namely, that *some* of the fibres are continuous with the white substance of the spinal cord."

His opinion as to the nervous fibres joining the grey substance is far from *wavering*. He says he repeatedly satisfied himself and others of this fact; but he by no means speaks so confidently as to the other fibres being continuous with the white substance of the cord. Speaking of this subject, he says:—"It is doubtful if the actual junction of the fibres of the nerves with the white fibres of the cord, has ever been seen; those nervous fibrils which are lost in the white nest of the cord, are so very delicate after they have passed the pia mater, that they cannot be traced with the naked eye; and I have found, after repeated examinations, that it is impossible to perceive the mode of their junction with the fibres of the spinal cord, by the aid of the microscope, in consequence of the thickness and opacity of the pia mater with which they are covered. There cannot, however, *I conceive*, be any *doubt* that there is a direct continuance between these nervous filaments and those fibres of the cord which ascend longitudinally to the brain, and which are subordinate to sensation and volition."

Now, Mr. Grainger states, "he has no *doubt*" of the continuity, and he advances this *continuity* as a corroboration of the views of Dr. Hall. I cannot imagine his grounds for the supposition; is it possible he can have, in his own mind, supported the hypothesis because it is conformable with the theory of Dr. Hall? But this would be an *argumentum in circulo*, corroborating *a theory* by an *assertion*, of which assertion there is no proof, unless the theory be first taken for granted.

The direction of the fibres upwards, as figured in the commencement of Mr. Grainger's work, is no argument, although Mr. G. seems to think so; for I believe that, in many, they *descend* in the direction of the caudal extremity of the vertebral column, as well as *ascend*.

Since my attention has been directed to this subject, I have not been able to dissect the cord in the *human subject*, but I have examined it in the *calf*, and found a fan-shaped arrangement of the fibres, some ascending, others descending, others transverse.

(*a*) Circle representing section of spinal cord in calf.
(*b*) Circle representing grey matter.
(*c c*) Projecting horns of the grey matter.

In my opinion Gall, Weber, Ollivier, Arnold, &c., are right in saying that *all* the fibres of the roots go to the grey substance of the cord, the seat of excitomotory power. I am inclined, also, to think that the *ascending* and *descending* fibres of certain animals exist partly in consequence of the elongated form of the spinal ganglia, and partly in consequence of the relative position of the muscles to the ganglia which supply them.

We may now turn our attention to Dr. Hall's and Mr. Grainger's ideas as to excited and voluntary motion.

These gentlemen imagine that the *excitomotory or involuntary muscular action* has its origin *solely* in the grey matter of the spinal cord (including its vertebral and cerebral portions), and that the apparatus of *voluntary motion* consists of the *convolutions* of the cerebrum, the laminæ of the *cerebellum*, with the *white fibres* of the *cord*, and *sentient* and *voluntary fibres* of nerves.

In no part of his work does Dr. Hall state that the grey matter of the cord has anything to do with voluntary motion; indeed, in various places he directly asserts, or indirectly implies, that the true spinal cord has *nothing* to do with *voluntary motion*.

Mr. Grainger says, indeed, that Sir Charles Bell and Müller casually state that the brain, in producing *voluntary motion*, acts through the *medium* of the cord, the latter being *more* than a mere *conductor*; but he adds, that these physiologists layed no stress on this opinion; in fact, that they did not follow up the idea.

You will perceive that Mr. Grainger considers the power generating voluntary motion is exerted in the convolutions of the cerebrum, or laminæ of the cerebellum, and is conducted into the nerves, and thence to the muscles, by the white fibres of the cord, which (he considers) descend *without* any *connection whatever* with the seat of *power* in the *cord* (the grey matter).

Having now mentioned the notions of Mr. Grainger, and, I believe, of Dr. Hall, as to the seat and production of excited and voluntary motion, I shall next simply state *my* views, and compare them with those of these two gentlemen, at the same time giving my arguments in favour of my own opinions, and against theirs. I should first, however,

say, that, with Sir C. Bell, Hall, Müller, Flourens, and Grainger, I assume that voluntary power does not exist after the removal of the cerebrum and cerebellum; that, in fact, volition is seated in the convolutions of the brain and laminæ of the cerebellum. Do not misunderstand me, however. Although I consider these parts to be the seat of *volition*, I think, in opposition to Dr. Hall and Mr. Grainger, that they are not the *sole sources* of voluntary *motion*. My views are only an amplification, an extension of the *hints* of Sir C. Bell, Müller, and Mr. Carpenter; and feeling not the slightest wish to overturn the beautiful theory of Hall, I wish to combine with it an opinion suggested, although not very distinctly, by two physiologists of the greatest celebrity, Bell and Müller.

It appears to me,

1. That excitomotory muscular action (of the involuntary kind) has its origin *solely* in the grey matter of the cord, and that there is a provision by which each nerve is connected with distant portions of the seat of spinal power (the grey matter of the cord), so as to enable a stimulus affecting *one* to give rise to the action of muscles supplied by several nerves, *i. e.*, to combined muscular action. Many of the actions which were formerly called voluntary, or instinctive, are of this latter kind.

2. That when any muscle or muscles move under the influence of the will, this movement is induced in one of two ways. 1st. Some stimulus acts upon the peripheral extremities of the nerves; this stimulus, or the impression of it, is conveyed along the nerve to the part of the spinal cord appropriated to it, which part of the cord is really a ganglion, or distinct seat of power; having arrived there, it originates or calls into activity a power which is capable of exciting involuntary contraction. Longitudinal *white* fibres of the cord are interlarded with the ganglion, and convey to the convolutions of the brain what is passing in the ganglion, thus giving rise to a *sensation*. Next follows a perception of that sensation, then various mental acts, to which succeed volition, which, with Hall, Grainger, &c., I consider as having its seat in the cerebral convolutions, or the laminæ of the cerebellum. Now this *volition*, or an *agent produced by it*, is carried by white longitudinal fibres of the cord to the ganglion, where (according to its nature, for it is of two kinds) it excites motive power, or restrains it. 2ndly. The next way in which voluntary motion is produced, is by volition being *carried down* in the same way, while it is *produced* by a simply *cerebral* agency, and *independently* of any stimulation of the *extremities of the nerves*.

It will be observed that, according to this view, the spinal cord is concerned in producing voluntary as well as involuntary muscular contraction, but, in giving rise, it receives its stimulus from the *brain*.

3. That volition, or rather the agency to which it gives birth, is not always of the same kind. Every one is aware that it can regulate the intensity of the motion, so as to cause powerful contractions, or the most gentle; it can also stop other common excited or involuntary motion, or at all events diminish its force.

Now as to Dr. Hall and Grainger's opinion, that voluntary motion is determined independently of the true spinal cord, I object to it.

FIRST.

Because it contradicts a law of nature, a law not confined to anatomy and physiology, but equally established by other natural sciences—astronomy, mechanics, optics, hydrostatics, &c.; a law not depending upon the assertions of any author, but universally recognised, viz., that in the planning of organised and unorganised bodies, it has been the object of the Creator to derive multiplied effects from a few causes; whereas the attributing of human muscular contraction in one instance to the true spinal cord (or ganglions) alone, and in the other instance to a totally different part, a part provided for other functions (the intellectual, and those depending upon them), would be a multiplying of *causes* for the *same act*, of which multiplication *nature* furnishes *no example*.

SECOND.

Because this theory is inadequate, being incapable of accounting for some functional phenomena; whereas, if well founded, it should supply an explanation of *all*. For instance, the advocates of that system are unable to account for "loss of power of the sphincter ani in compression of the human brain and spinal cord (apparently proving that muscle to be voluntary), whilst the muscle retains its power in animals after the division of the spinal cord."* I have carefully referred to the published opinions of Hall, and find he does not explain this difficulty. It would appear that Mr. Grainger referred in the same way, and found that Dr. Hall did not attempt to explain by his system the action of this muscle under such circumstances. But as a quotation from Mr. Grainger will be more convincing than assertion of mine, I shall give that gentleman's words.

"The mode of action of this muscle appears to me to be one of the most difficult

* A few days since I had the pleasure of conversing on the subject with Dr. Marshall Hall, who informed me that Mr. Grainger was wrong in supposing he could not explain the action of the sphincter. Dr. Hall's explanation is nearly the same as that given in my paper.

questions connected with the whole muscular system, for whilst it is found that the sphincter loses its power in compression of the spinal cord and brain, in man, as if its habitual contraction was producod by volition, it is found, on the contrary, in animals, that, after the cord has been divided, and when it can be proved there is neither sensation nor volition, the action of the muscle still continues."

Mr. Grainger then mentions an explanation of Mr. Barron, which, he says, however, is contradicted by Dr. Hall's experiments, and those of others, and in this most persons will coincide with him.

Mr. Grainger drops the subject, without attempting a solution of the difficulty.

Here, then, is a proof that "the system" is not too well-founded; for it is deficient in one of the *requisites* of a correct theory, inasmuch as it is *totally inadequate* to explain an important function.

THIRD.

In support of his opinion as to the spine not having anything to do with voluntary motion, Dr. Hall has not advanced any proof derived from human or comparative anatomy or physiological experiments; his experiments, &c., merely prove that besides voluntary motion, there is another kind, whose sole origin is from the true spinal cord, and that incident and reflex currents of nervous influence take place, both in excited and voluntary motion.

FOURTH.

The only argument advanced by Mr. Grainger (to prove that some fibres of the nerves *ascend* to the brain, and others *descend without any communication* with the grey substances of the cord) is the fact that, in *man*, some of the fibres of the nervous roots *ascend*.

Now this argument will not hold; for in some animals, as the calf, you may see that there are *descending* as well as *transverse* and *ascending* fibres. Now, if you say that, because some fibres seem to *ascend*, that they do so for the purpose of effecting a communication with the source of voluntary power, why may you not say that the *descending* fibres of the calf go *downwards* for the *same purpose*?

But the supposition of Mr. Grainger, as to the ascending fibres of the roots, is opposed by a still stronger argument. It is stated by Mr. Serres (*Comparative Anatomy of the Brain*, tome ii, page 120), that in the larva of the fly there is a ganglionic chasm, or vertebral cord, much shorter than the whole animal, and that those nerves which come from below, join the cord at acute angles, whilst those coming laterally are perpendicular to the spinal cord. Now, when the larva is changed into the nympha, the ganglions descend lower down; hence the nerves that before ascended and joined at an *acute* angle, now become *transverse*, or join at a right angle.

From this it is evident that the ascent of nerves depends upon the relative position of their muscles to the spinal cord; of course no value can be assigned to the ascent of the fibres of the nervous roots, as a proof of their not being in connection with the grey substance of the true spinal cord.

FIFTH.

That we have *ascending* fibres in animals, who do not possess anything analagous to the cerebrum, and consequently the mere ascent of nervous fibres from the roots of nerves in the cord, proves nothing with regard to the cerebrum.

Let us examine the nervous system of the nautilus as displayed by that clever anatomist and physiologist, Mr. Owen. What is the signification or true character of the pretended brain of the nautilus? It is (Leuret, part 1, p. 34) a commissure placed within the optic nerves, and giving origin to the lingual and maxillary nerves. What part is analogous to it in the brain of the mammiferæ and man? Surely the medulla oblongata, which is a *commissure*, and gives rise to the *same nerves*. This is the only way of determining the analogy, for there is no resemblance of mere form. And if this be the case with regard to the nautilus, which has the senses of sight, touch, and, perhaps, of smell,—it will, of course, *à fortiori*, apply to the inferior molluscous animals, which possess touch only; for, according to the well-known laws of comparative anatomy, this *subtraction* of faculties must lead to a subtraction of organs. It will, therefore, necessarily follow, that the lower molluscous animals have no brains; and, of course, the lower articulated animals are equally deficient. Let us examine the gangleon of the leech (which neither sees nor hears), and is one of those brainless animals—what do we observe?—fibres of the nervous roots ascending and descending in the cord. So that I have not spoken without grounds, when I said that the fibres of the nervous roots *ascend* in animals, where this ascent cannot be to a brain (the brain not existing). And as animals possessing brains are proved by embryology and comparative anatomy, to have the cerebrum and cerebellum *superadded* only to a cord analogous to that existing in lower animals, it follows, in all probability, that the ascending (and descending, if any) fibres are analagous to those of the lower animals, and have no relation to the true brain.

I have advanced arguments which seem convincing, unless, indeed, it be proved that I have fallen into some error. If any fallacy be established against me, I shall readily relinquish my opinions, and be thankful for having the truth pointed out to me.

I shall now endeavour to show that the nervous theory of Hall, as I have modified it, contradicts no law of nature, and is fully adequate to the explanation of all nervous phenomena, even those (as of the sphincter) which Hall and Grainger failed to account for.

As to mere excited motion, every one is agreed; nothing need be said of this. But, with regard to voluntary motion, I believe it may result either from *merely* mental acts, or an impression made upon a point of the true cord, by a stimulus acting upon the peripheral extremities of the nerves; may be conveyed by some of the white fibres of the cord to cerebral convolutions, or the laminæ of the cerebellum producing a sensation, *and there, through the* INTERVENTION *of mental* acts, *give rise to a power* which I shall call spino-*excitory*; this spino-excitory power is conveyed down to the same point of the cord by reflex *spinal* fibres, and reaching the point where the spinal cord was first stimulated, determines the action of the ganglion, which that part represents; and the action of this ganglion excites the muscular contractions, which are feeble or strong, in proportion to the intensity of the spino-excitory power, which varies in force at the pleasure of the individual. But not only is *this* spino-excitory power capable of acting upon the true cord, so as to produce motion, but a variety of this power, generated in the same parts (brain, and perhaps cerebellum), is conveyed down to what represents the spinal ganglia of the invertebratæ, so as, through these, to restrain the common excitomotory or involuntary muscular contractions.

This view has the advantage of not being contradictory to a law before-mentioned (namely, that nature delights in numerous *effects*, but never unnecessarily multiplies *causes*); muscular contraction, whether *voluntary* or *involuntary*, is, according to this *theory*, *always* produced through the medium of the *cord*, which is stimulated in one case directly from the extremities of the nerves, in the other from the brain. (The stimulus from the brain, as I have before said, is of two kinds; it may determine motion, or it may restrain excitomotory contraction.)

2. This theory accounts for facts attested by many of the best anatomists and physiologists, and which would otherwise be unexceptionable, namely, that if the spinal cord of the child at birth, and for some months after it, be examined, the grey matter (constituting the true cord) is found to exist in great quantity, whilst the white fibres are comparatively deficient; and that, on the other hand, if the human cord be examined at the age of 7, 8, 15, or upwards, the quantity of the white fibres is found wonderfully increased, so as to make the grey matter appear deeply buried beneath it; but at the same time there is not observed any corresponding increase of the nerves.

According to the opinions I advocate, the nerves contain only two classes of fibres which place them in connection with the true cord, and which exist in animals that have *no brain*, and in the human subject before the *intellectual faculties* are *developed*, as well as *after that period*; moreover, white fibres of the cord exist for the purpose of enabling the intellectual faculties to exert an agency on the "spinal ganglia," and thus determine, regulate, or restrain, muscular contraction.

Of course these fibres will exhibit a rudimentary state until the development of mind calls for their perfection; hence the deficiency of white matter in the infantile cord; hence the increase of white matter in the cord as the intellect is developed; and hence, also, the comparatively stationary state of the nerves which are excited to action by the same influence as before (the grey matter of the cord); of course, then, they do not require the development of additional fibres.

I may add, that the observations I have just alluded to contradict the opinions of Mr. Grainger, who supposes that the fibres of the cord connected with voluntary motion pass into the *nerves*, which thus have four kinds of filaments. If this opinion were well-founded in this particular, the nerves should undergo an enlargement at the same time with that of the white matter of the cord; but no such increase is observed.

The opinions I have made so free as to suggest, are supported also by the circumstance of their sufficiency to account for the action of a muscle which seems to have puzzled Hall and Grainger; I mean the sphincter ani.

I believe that, in compression of the brain, the sphincter *does not lose* its power, as has been supposed; I believe it retains its power (which is *involuntary*) just as it does in decapitated animals; and I thus account for the non-retention of the fæces.

The contraction of this muscle is more easily produced by stimuli than that of the other muscles of the gut (or connected with the gut); hence, when the rectum, in health, contains but a small quantity of fœcal matter, the *extraordinary* and *well-ascertained* sensibility of the sphincter insures its contraction, and, of course, the retention of the fæces; but when the contents of the gut accumulate and distend it, the part above the sphincter is now stimulated, and this stimulation tends to produce *excitomotory* and *involuntary* contraction, *not only* of the *rectum*, but, through means provided for combined movement, of *other muscles* also, some of which are distant from the part stimulated, the *diaphragm*, for example; these muscles, acting in concert, overcome the sphincter, and discharge the fæces as soon as the rectum is sufficiently distended; unless their victory over the guardian of

the outlet be prevented by a species of spino-excitory (cerebral or voluntary) power, which stops or diminishes muscular contraction.

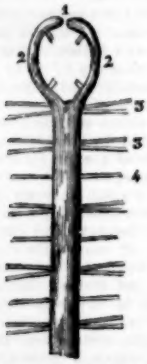
This restraining power enables the individual to counteract the tendency to an evacuation; and every person is conscious that a certain voluntary command is exerted for the purpose of restraining the call to evacuate the gut.

In infancy, the intellectual faculties are not developed, or are imperfect, and, of course, the musculo-controlling power (which is a product of the cerebrum, or mind) cannot be exercised; therefore, the rectum is emptied at once, the desire to do so not being resisted.

If accident or disease affect the cerebrum, the controlling power of the mind cannot be exerted, or is imperfectly exerted; hence, when the gut is sufficiently stimulated, those muscles intended to coaquer the sphincter are called into action of the *involuntary kind*. The sphincter contracts still, and is by no means paralysed, but is forced to yield—is overpowered.*

In the course of my observations, I have always spoken of the ganglia (along with the connecting cords) as the "analogue" of the spinal cord of the vertebratæ; this is proved by what I have already said regarding the cephalic ganglion of the nautilus. Of course, pursuing the analogy, the inferior ganglia and cords will be analogous to the part of the spinal cord *below* the medulla oblongata. That the analogy can be borne out, will be shown by these copies, on an enlarged scale, of the beautiful plates of Leuret.

Earth Worm (Leuret).



(1) Cephalic or œsophageal ganglia.
(2) Cord forming œsophageal ring.
(3) Double nerve.
(4) Single nerve.

Spider (from Treverianus).

(1) Cephalic ganglion.
(2) Thoracic ganglion.
(3) Abdominal ganglion.

Bee (from Ratzeburg).

(1) Cephalic ganglion.
(2) Optic ganglion.
(3) Thoracic ganglion.
(4) Abdominal ganglion.

But it is confirmed, indeed, and placed beyond doubt, by the paper of Mr. Newport, in the *Philosophical Transactions* for 1836, and the beautiful plate which accompanies it.

I give these proofs, because, as there used to be some difference of opinion on this subject, it might otherwise be supposed that I reasoned from false data.

In a preceding part of my paper I said, that Mr. Carpenter had laid down the proposition, that voluntary motion cannot occur without the intervention of the spinal cord; and I added, that he merely asserted it, without giving proofs. It remains for me to make good what I have stated.

Mr. Carpenter's essay consists of 22 pages. Of these six are devoted to an exordium or introduction; pp. 7, 8, 9, 10, 11, and 12, are devoted to a mere statement of his theory.

Pages 13, 14, 15, 16, 17, 18, 19, and 20, are devoted to proving that, not only are

* It is not so easy to explain retention of urine in diseases of the brain; Dr. Hall informs me his opinion is, that the excito-motory action of the expulsor is not sufficient to expel the contents of the bladder, and that the more powerful action determined by the will is necessary. In some of the lower animals a nerve goes direct from the cephalic ganglion to the organs of generation. Can this fact assist in clearing up the mystery?

there excitomotory instinctive actions, but also that there are cerebral instincts, and it is in connection with this subject only that he advances arguments.

The cases quoted from Mr. Madden, Dr. Ley, and Sir Charles Bell, prove nothing but what Dr. Hall, Mayo, Müller, &c., but especially Hall, had previously proved; namely:—1. That there are two kinds of muscular contraction. 2. That the involuntary form still exists in paralysed limbs. 3. That palsy takes place when the brain is perfectly healthy, and when, at the same time, the nerves are perfectly healthy; showing that here loss of voluntary muscular power results from pressure or disease of the white columns of the cord.

In fact, Mr. Carpenter makes an assertion with regard to the spinal ganglia being concerned in *voluntary* motion, but does not advance any of the proofs *I have given*, or *any at all*. He certainly makes the assertion in a more decided and marked tone than either Sir Charles Bell or Müller, who had, however, *previously* made it.

SOME REMARKS ON THE

TREATMENT OF WOUNDS

INFLICTED BY

POISONOUS SNAKES;

Contained in a Letter addressed to the Editor of THE LANCET.

By Dr. KNOX, of Edinburgh.

The number of THE LANCET, for September 21, of the present year, contains a letter, addressed by Mr. John George Brighton, surgeon, of Kinver, Staffordshire, to F. Corbyn, Esq., garrison-surgeon, Fort William, Calcutta. Although I have not the pleasure of being acquainted with either of these gentlemen, I shall take the liberty, as the matter touched on is one of professional and public interest, to offer a few remarks on that letter, which I hope may be acceptable to the readers of THE LANCET.

The facts and observations contained in Mr. Brighton's letter, are chiefly as follows:—Mr. Hayman, an officer on board the *Algerine*, was bitten by a snake on the 9th Oct., 1837. About *two hours* after the accident, Mr. Brighton was called from another vessel (there having been no surgeon on board the *Algerine* at the time), who found Mr. Hayman in the following state:—"Countenance extremely anxious, and covered with a cold and clammy perspiration; great difficulty of breathing, pulse weak and irregular, lips covered with saliva, and great horror exhibited on being presented with any liquid." Mr. B. further ascertained that the snake had been taken by the crew from alongside the ship while washing decks." Mr. Hayman continued well for nearly two hours, unconscious of the impending mischief; he then, all at once, "squinted horribly, and fell down in a fit." A fatal result being dreaded, another surgeon was sent for; "a ligature was applied at the wrist, and ammonia, in brandy and water, was offered him, which he could not swallow." Finally, mustard plaisters were applied to the calves of the legs, but all exertions proved useless; he gradually sank, and expired, apparently without pain, about four hours after the receipt of the bite. Mr. Brighton further adds, "that he felt for a long time subsequently much anxiety as to the treatment which had been adopted, and was not a little relieved to find that the bite of this snake is, by the natives, considered inevitably fatal."

Subsequently, on returning to Europe, Mr. B. ascertained, by consulting Dr. Stephenson's work on medical zoology and mineralogy (p. 80), that the snake in question, with whose name and nature and dangerous qualities, he was at the time unacquainted with, was the pseudo-boa faciata, a snake familiarly known in India, and long ago described in Dr. Russell's great work on Indian serpents.

As my object in addressing this letter is in no step critical, I shall at once refrain from making any remarks upon the above communication. There are one or two points, however, which must strike even a casual reader, such as the fact, that the *most powerful remedy*, and, in my opinion, the *sole remedy* for the poisoned wounds of serpents, was not even thought of in the above case—I mean *excision* of the *bitten part*. The case is not a singular one, however, in this respect; for several others have come to my knowledge, sufficiently numerous, at least, to warrant me in saying that surgeons, and especially young surgeons, proceeding to the colonies, are not sufficiently aware of the importance of *excision*, or may possibly have taken up some unhappy prejudice against it as a remedy for such wounds. The only other critical remark I shall take the liberty of making here, is, the great regret with which I have seen so many young surgeons (and old ones, too, I fear) proceed to the colonies, not only ignorant of the structure of these dangerous reptiles generally, but totally inadequate to determine, by anatomical researches or otherwise, to what class of snakes may be referred the one at the time, perhaps, submitted to their inspection; thus causing, not unfrequently, great and unnecessary alarm and anxiety where none should exist, or lulling the patient into a fatal security, to terminate a few hours afterwards in death.

My time being exceedingly occupied as a lecturer on anatomy, I am forbidden to attempt any extended remarks on this interesting subject, and it is rather with a view to induce our colonial surgeons to collect materials for a practical history of poisoned

wounds, and thus provide the young and inexperienced with a few brief but useful principles and rules for conduct under circumstances at all times hurried and alarming, that I now make the following observations:—

During a period of about three years, I resided on the frontiers of our South African colony, the Cape, and accompanied, as surgeon, many expeditions or *commandos*, both regular and irregular, into Caffraria and into the Wild Bosjeman country, to the north of the Winter Bergen, and sources of the Black and White Ker rivers. In this way, and in consequence of the detached and scattered disposition of the troops, the whole of the country from the Snowy Mountains to the Indian Ocean, and from the Winter Bergen, and beyond it, to Litzikanne, became perfectly familiar to me; so also did the race of snakes, serpents, and venemous reptiles of all sorts; for this was peculiarly the land of serpents, then and perhaps still. I have encountered them, and seen them met with by the troops and individual travellers every where; on the desert, in the forest, haunting the muddy pools of the Groat Visch rivier, or crossing the clear and limpid streams of the Kat and Koonch rivers, in our gardens, houses, beds, &c.; thus we became familiar with this terrible class of animals, if such a term can be applied to the coolness with which they were met by the experienced, compared with the passionate, hurried, and, consequently, ill-directed efforts of those to whom such experience was wanting. When I first witnessed the alarm spread amongst the dark races of men, natives of the Cape, viz., the Hottentot, Boschjemar, and Caffre, by the sudden and unexpected appearance of a "snake amongst the grass," I was greatly surprised, and felt disposed to ascribe what I then considered overabundant alarm to a natural timidity. But after a prolonged residence in that "land of wild beasts," I feel inclined rather to ascribe the very great alarm shown by the dark or coloured races to an *instinctive* feeling of danger, based on early education—that is, an instruction commenced by their parents from their very earliest years, to hold all snakes in abhorrence; to trust none; to avoid them to the very utmost, and never, under any circumstances whatever, to hazard life by remaining a moment within the limits of the spring of the serpent. To this must, of course, be added the accumulated experience of ages telling on the races, and rendering their aversion to serpents almost instinctive. Now I never could observe that this great alarm for snakes existed in the white races, whether Dutch or English, whether colonists or strangers but recently imported; and although an anatomist, and physiologist, and medical man, and, therefore, doubly sensible of the just cause for dread in approaching any of these dangerous reptiles, it is a curious fact, that, even to the latest day of my residence in the colony, a disregard for these animals, and perfect indifference when they showed themselves, and a fearlessness in attacking them, never altogether left me, nor any of the British officers and men with whom I was in daily intercourse. Dutchmen, in like manner, were perfectly cool under circumstances which greatly agitates the Hottentot race. I must leave to others to explain these remarkable differences in the feelings of the races under the same circumstances; but looking back dispassionately, I must declare the Hottentot and Caffre race to be in the right, however much at the time I made their well-grounded fears a frequent subject of ridicule and amusement to my brother officers. This is the conclusion I arrive at—*every human being should avoid snakes to the utmost of their power*; all foolhardiness in respect to them is little short of madness.

Of the numerous instances which might be offered confirmatory of these remarks, I shall limit myself to a few. A strong *commando* or scouring party was sent from head quarters to examine the Great Fish river Bush, and all the drifts (fords) across the river from the pass of De Bruin, to the Fronpetters Ford, it being strongly suspected at the time that the Caffre was in great force in the forest. The party saw nothing, returning to head quarters without firing a shot; but in passing along the northern slope of the beautiful range of mountains, known by the name of "Governor's Slop," the line of troops, composed essentially of Hottentots, was thrown into the greatest confusion, in consequence of one of the men having all but trodden on a *Berg adder*, a small, but most dangerous kind of serpent, whose bite, like that of the "boa fasciata," is deemed fatal by the natives, with how little truth will be shown hereafter.* Now I had witnesssed the "Berg adder" trod over some half dozen times by white men, and twice on the Kaha Berg (mountains) stepped over it myself, and all but trod on it, yet, on none of these occasions, was there that extraordinary scene of confusion and alarm which I now remarked amongst the Hottentot troops. I feel now assured, however, that upon the whole, they are in the right, and that all the scoffing and ridicule I heaped upon the transaction when I got to head quarters, describing the corps as having been routed by a snake eight iches long, was ill-judged, and injudicious on the part of a medical man. Indeed, on mentioning the circumstance some time afterwards to that most excellent officer and man, the late Major Fraser (who

* Mr. Brighton in his letter considers the bite of the pseudo-boa, to be uniformly fatal; the Cape natives say this of every very dangerous snake, but there is no truth in such a remark.

commanded the Hottentot corps), he mildly assured me that I was in the wrong, and that the "Berg adder," notwithstanding its diminutive size, and comparative smallness of its head, was amongst the most dangerous of the snake kind. He had known numbers killed by it, and amongst others, mentioned *two*, whose cases may be considered from his high authority as good as official.

Case as related by Major Fraser.—Some soldiers of the Hottentot or Cape corps, were stationed at a signal post, about two miles from head quarters; two were bitten, nearly at the same instant, by a snake ascertained to be the "Berg adder;" a person was despatched, without an instant's delay, to the nearest point (the barracks and hospital) for assistance; but although not more than twenty minutes had elapsed from the time the bite occurred and the coming up of assistance, both men had expired. The Major concluded by assuring me that the bite was fatal, and no medical aid could avail; an opinion I had the pleasure of afterwards proving, to the satisfaction of the major himself, to be unfounded.

I beg my reader for an instant to attend to the following points:—1st, snakes are not dangerous in proportion to their size; the most diminutive may prove the most to be dreaded; 2nd, in respect to external appearances, the size of the head is not to be regarded as a proof of the poisonous nature of the reptile or otherwise; the head of the puff adder is, indeed, large and broad; but although the boldest amongst snakes, he is not the most dangerous. The heads of the pseudo-boa, the water snakes, and the Berg adder, are quite proportioned to their body. Before I proceed to lay down, or at least endeavour to establish some other practical points for the guidance of the surgeon, I shall here take the liberty of mentioning a curious opinion which I found some Hottentots maintained; they think that the puff adder (which they greatly dread) follows his prey or enemy by the scent. This opinion I first learned by the following circumstances:—The scanty pasturage during the season of drought, led to the practice of turning the horses at liberty to graze on the desert, and search for food wherever it was to be found. In this way they frequently strayed many miles into the wild Klooffs of Caffraria, or at least the uninhabited territory, which at that time formed a kind of neutral ground, and we were occasionally forced to meet them on foot. On one of these occasions, accompanied by a young Hottentot servant, I had explored, to no purpose, the wilderness for many miles, and was returning homewards, when suddenly my servant, who happened to be a good way in the rear, gave me notice, by several vehement cries and gestures, that I had passed a puff adder, and that the snake was at that moment advancing rapidly towards me; at the same time he shouted out to me to leave the narrow foot-path on which I stood, and to ascend the low hill to my right, so as to place myself off the *scent of the snake*, and thus I learned that the Hottentot believed that the faculty by which the snake advances on its victim was the sense of smell. But I had no faith in such an opinion, and the result showed that I was correct; for adopting the good old English practice of remaining unmoved on the spot, until I could clearly see, not only whence the danger came, but its vicinity and magnitude, I soon found that this puff adder (the largest I ever saw) was simply advancing upon my footsteps and following them precisely. It happened that the slope of the hill on which I then stood, was partially covered with a low stunted bush about breast high, scattered in patches over the side of the hill; as the snake advanced at a tolerably quick pace after me, he was forced to rise up nearly straight, in order to see where I stood. I thus saw the swollen head and a considerable part of the body raised for an instant above the level of the bushes, and levelling the fowling-piece in my hand too tardily, lost sight of him instantaneously. I now resolved to fire the next time he raised himself up, and this opportunity occurred in less time than I take to narrate it; but here another difficulty presented itself; the head *alone* appeared above the bush, now I was anxious to preserve the head for dissection. I trusted, therefore, to a *third* chance, come what might. By this time the snake was within twelve paces; he raised himself once more above the bush, to take, however, his last look of me, for my fowling-piece, on whose precision I could entirely depend, having often hazarded life upon it, drove the shot through the neck like a ball, leaving the head uninjured.* The poison teeth or fangs of this snake were of great size, and I have them still in the museum.

Another position I shall here venture to offer, for the consideration of the profession is, that no *external characters whatever* can well be trusted in the determination of a snake. What I mean is this: there are

* As the head of the snake was the only part I chose to take home with me, it was taken off a little above where the shot had struck the neck, and my servant threw the body, or remaining portion, on the top of the nearest bush. This nearly proved fatal to a farmer, who next day rode along the same foot-path in quest of his horses, which had, like my own, strayed into Caffraria. The part of the snake which was left by my servant entangled in the bush, came in contact with the face of the horse rode by the farmer, and the animal getting greatly alarmed, suddenly bolted, throwing his rider with much force down the hill.

many *innoxious* snakes which are so closely imitated in their external appearance by others truly poisonous and exceedingly dangerous, that I feel warranted in laying down this term, viz., *that no snake* however much it resembles a harmless one, or those of a class known to be harmless, should ever be handled, until the person be perfectly assured of its death. Again, on the occasion of a person being bit by a snake, and the dead reptile being produced, the surgeon ought not to rest satisfied with the external appearance of the snake, but proceed, without a moment's delay, to ascertain the presence or absence of poison-fangs; the result must direct his practice. In case of the snake having escaped, *excision* of the part bitten ought immediately to be resorted to. I shall illustrate this point by a single observation, although many occur to me, and then, lest I tire my readers, hasten on to a consideration of the remedial measures. A large yellow snake, fully six feet long, was killed near the banks of the Great Fisch Rivier at Roode Waal; it was shown me by the soldiers before it was quite dead, and at first sight I harshly said that the snake was a harmless one; I handled it even before it was quite dead, and tossed it at some monkeys (chained to a post in the court-yard) whose horror for all sorts of snakes, dead and living, is like that of the Hottentot, indiscribable. I remarked to the by-standers that the snake had none of the external characters of poisonous snakes; the head was small, somewhat rounded, and the body elongated, tapering uniformly and equally to the tail; it wanted also the strength of jaws which usually characterised the poison snakes of Africa. I remarked, notwithstanding these plausible reasons, that the Hottentots who were present, seemed to doubt my opinion; so to settle the matter, I examined carefully the mouth of the snake when dead, and found, to my great surprise, that it was armed precisely as the puff adder and viper, with poison-fangs of great length. I have never since that time spoken of the *external* characters of snakes.

I now come to the consideration of the opinion so generally entertained, that the bite of several poisonous snakes is almost inevitably fatal; and I believe that it is so, if proper remedial means be not speedily adopted. The sole remedy is *excision of the bitten part;* all other means seem to me only dangerous delusions. Of those cases which came under my immediate notice, and in which this powerful remedy (the only one I think recommended by Mr. Hunter) was resorted to, I shall select one, as the best calculated to bring out all the more difficult points for consideration.

CASE.—Bite of the Berg adder; recovery against the opinion of nearly all the colonists present.

I was sole surgeon in the great *commando* against the Caffre chiefs, conducted by the late unfortunate Lieut.-Colonel Brereton. The troops consisted of a mixed force of British infantry, Hottentots in our service, and some colonial farmers or mounted boors. In advancing into Caffraria by De Bruin's Drift, the army crossed in succession the Koonass and Kel Rivers, and on the banks of one of these (my recollection does not now enable me to say which) the troops halted as usual after a day's march. I had gone down from my tent to the river side, with a view to ascertain the strength of the current, and the probable utility of the sheen for agricultural purposes, when an orderly came for me in great haste. He had been sent by Colonel Brereton to desire me to come immediately to the camp. There a very curious spectacle presented itself. The troops, grouped around, formed a circle, in the centre of which there stood Colonel Brereton and his officers, whilst on the ground sat a Dutch farmer, pale as death, supported on each side by one of his countrymen. Just before him lay the cause of all this; a small snake, with its head crushed to pieces; insignificant to look at, but then the snake in question was the terrible Berg adder, whose bite most present believed to be inevitably fatal. In this opinion they were joined by Major Fraser, who assured us that the farmer would die in about twenty minutes. But as neither Colonel Brereton nor myself were of this opinion, I proceeded without delay to examine the part bitten, and ascertained with a pocket magnifying glass that the bite was over the first (nearest) joint of the great toe. Before all this was done, five minutes had elapsed, Colonel Brereton having kept his watch in his hand from the moment of the accident, and therefore was prepared to give exact information on this point. I now gave the farmer *two* minutes more to make up his mind, informing him at the same time that I was ready to cut out the bitten part; that I knew of no other remedy, and that if not agreed to in *two minutes*, I should decline further interference. After consulting with his brother and son (for my patient must have been fully 50 years old), and being urged by Colonel Brereton to behave like a man, he consented, or rather his friends consented for him, since by this time a sudden vertigo, with vomiting and loss of sight, had taken place. I cut down to the tendon, and, to make sure, scraped it, washing the wound with brandy and spirits of ammonia, which were also given him pretty liberally. I had the pleasure of seeing the worthy farmer resume his duties on horseback four days afterwards, quite recovered.

When I sat down to write this hurried and, I fear, very imperfect notice, it was my intention to have added a short section on the specific characters (with reference, I mean, to the teeth) of these poisonous snakes,

which in their dentition resemble strictly the common viper of Britain, and the puff adder of South Africa, contrasted with those which, like the *hydras* of Schreber, and pseudo-boa of Russell, have a peculiar dentition, intermediate between the altogether harmless snakes and the genus puff adder, viper, &c.; but perhaps it would better serve the public, and might be acceptable to many surgeons proceeding to the colonies, were you to publish a memoir, printed (I cannot say published) in that singularly unknown work, the *Transactions of the Wernerian Society*. In the fifth volume, part 2, of that Society's Memoirs, will be found an essay on the poison fangs of serpents, in which the results of a fair field for observation, and numerous minute dissections, have been stated by me as briefly as I well could. But should it be at variance with the principles of conducting this journal, to reprint *entire* any paper, how obscure soever the work may be in which the paper originally appeared, I shall feel happy to prepare an abstract for THE LANCET of my "Memoir on the Poison Teeth of Serpents," in which I hope the young surgeon proceeding to the colonies will find several facts and observations worthy of his consideration.

Edinburgh, Oct. 9, 1839. R. KNOX.

P.S. I find I ought to have added, that I do not consider any *lapse of time* as contra-indicating the employment of excision of the bitten part; alarming symptoms which may have appeared will then subside.

THE LANCET.

London, Saturday, November 2, 1839.

THE Council of the *Royal College of Surgeons, London*, has "established" a new set of "Regulations, respecting the professional education of candidates for the diploma." We have looked in vain for any sign of liberal, enlightened views in the new Regulations. The College turns about, and sends forth new editions of its by-laws, every twelve months; but, unlike the vane, it never indicates that the wind blows from a favourable quarter. Amidst all its oscillations and vagaries, the corporation is constant to the principles of its corrupt existence—monopoly and short-sighted selfishness. Certificates—the old story—will be required, of having been engaged during *four* years in the acquirement of professional knowledge, *six months* of which shall have been occupied in the study of *practical pharmacy*, *six months* in attendance on the *practice of physic*, and the remainder of the period on the *practice of surgery, at a recognised hospital or hospitals in the United Kingdom*. Hence it would appear that the College in Lincoln's Inn Fields proposes to supersede the Blackfriar's Company, and the Halford College. "Practical pharmacy and the practice of physic" are to be studied during six months by candidates for its diploma! So the practice of physic may be acquired in six months, but the practice of surgery will occupy the student *three years!* Physic and surgery are two things, according to the enlightened Solons of Lincoln's Inn Fields. Anatomy, physiology, pathology, and therapeutics, are to be split into two halves, and the physical half is to be acquired in six months. The horror of practical pharmacy has subsided in the College, and its members may now ring the mortar, as well as wield the lancet. The occupation of the Rhubarb-hall Company is gone.

It will be remarked that the *practice of surgery* is to be acquired by attendance at a "recognised hospital or hospitals in the United Kingdom." The reason of this is too obvious. The legislators have an eye to the "perpetual fees"—the fifty or hundred pounds, which they extort from the student in the recognised hospitals. They get but five guineas for their courses of lectures; but they convert the charitable institutions of the country into Zoological Gardens, and show the sick poor, like wild animals, for money. Then they compel the student to pay the heavy admission fees. He has no alternative. He must produce certificates of attendance. He must purchase those certificates of attendance at the "recognised hospitals," or he cannot go up for examination; cannot enter the army, or the navy, or any other department of the public service. It would be impossible to match the shameless extortion and effrontery which

these regulations display, in the long annals of corporate corruption.

The world is supposed to have made some progress in enlightenment and liberality in these latter days. The barriers of national jealousy and enmity have been partially broken down. The advantages of a free commercial intercourse have been demonstrated, and practically recognised. The landlords do not absolutely shut the ports against foreign corn, nor altogether prohibit the people from eating bread produced in other countries. But the rays of demonstration have never penetrated the dark dens of the medical corporations; the *soi-disant* councillors of a liberal profession refuse to profit by the example of the trading community. They recognise no foreign hospitals. They shut the gates against all surgical knowledge which has not been acquired in the United Kingdom. In vain will the youth who has studied under the great continental masters of surgery, demand an examination in London. The hospitals of France, Germany, Italy, are not recognised in Lincoln's Inn Fields. What a bright example of British liberality!

The majority of medical men in this country will always be educated at home; but is it desirable to prohibit study in other schools, or to deprive the people of the United Kingdom of the advantages which the studious youth of the United Kingdom would not fail to derive from a comparison of the different modifications of diseases, and the modes of treatment in other parts of Europe? Has science any country? Is not the world her home? Why should the monopolists imprison us within our narrow confines, and make the sea which connects these islands with the continents of the old and new world, cut us off from brethren who are cultivating the same science, studying the same organisation, and pursuing the same exalted objects? Should not the heads of the profession do all that they can to promote the interchange of ideas and improvements? In Paris, the hospitals are thrown open to British students, who have frequently obtained the place of *Interne* as the mede of successful competition. Why are we represented as so much behind our neighbours in liberality? Why are the French hospitals not "recognised?" Why are foreign students never allured to this country by an enlarged, reciprocal liberality? Cannot the narrow-hearted, self-elected, self-seeking corporators copy the examples of foreign liberality, though they refused to take the initiative? In the Paris hospitals the sick are not made a show; the hospitals are not bazaars; the student has free access, under certain conditions; and this is well known to be the reason why they are not "recognised" by the London monopolists. Foreigners will ascribe the illiberality to its true cause; not to the English medical profession, but to the trading avarice of the irresponsible certificate-mongers.

It is a great error to suppose, as a few individuals have done, that our recent improvements in medical education are to be ascribed to the medical corporations. Those improvements are partly due to the natural progress of the human mind, and to the activity which has latterly pervaded all classes of society, but principally to the efforts of medical reformers, who have kept up an incessant pressure from without, and driven the monopolists, in spite of themselves, into the adoption of some good measures. When we compare the certificate-system, the oppression of enterprising teachers, the vexatious enactments of the irresponsible Colleges and Companies, with the simple principles which have always been advanced in this journal, and which would have been carried into effect by a representative senate, no cause for congratulation is left, but a feeling of deep regret that the incorporated nuisances have been suffered so long to obstruct the progress of education and science.

INQUESTS IN MIDDLESEX.

TO THE READERS OF THE LANCET.

35, Bedford-square, Oct. 29, 1839.

GENTLEMEN:—Allow me to commence this letter by re-stating some of the leading facts that were contained in the address which I published in THE LANCET of the 26th inst.

It has been proved to you that the transfer of the expense of holding inquests, from the *parish* rate to the *county*-rate, in consequence of the operation of the Poor-Law Amendment Act, has produced a large increase of demand on the last-named fund. At the same time it was shown that there was a corresponding decrease in the claims upon the parish rate.

The public were left to infer from the statements which were made at the Sessions House on the 11th of October, that the new charge upon the county-rate was simply the result of an addition to the number of inquests, whereas the fact has been indisputably established, that out of the sum of £4,134 16*s.* 3*d.* (quoted from the accounts for 1818, at the Sessions), not less than £2,384 11*s.* 3*d.* of that sum was paid in consequence of the transfer from the *parish* rate to the *county*-rate, wholly produced by the orders of the commissioners, and the 1st and 2nd of VICTORIA. Any increase which might have taken place in the number of inquests held in this county, had not, as you are now well aware, the slightest reference to me. Since I was elected to the office of Coroner, in February last, my weekly average of inquests has been *one less* than that of my predecessor, Mr. STIRLING, for inquests taken in the year 1838.

I have reminded you that when I was a candidate for the situation which I now hold, the Magistrates, after having discussed the "additional labours" which had fallen upon the Coroners in this county, proposed that the LORD CHANCELLOR should be petitioned, to induce his lordship to issue his precept for the election of *two* Coroners for the *Western* division of Middlesex.—Not a whisper was breathed at that time that there had been even one unnecessary inquest, or that there had been made one unrequired *post-mortem* examination. And yet, although the inquests which I have held average *less* in number than those of my predecessor, my political opponents are full of ungenerous insinuations to the contrary. The following extracts from the newspapers will enable you to perceive the course of policy which has been pursued on this occasion by a hostile press. Certainly, without intending it, the writers will render to me a most important service, and the attention which they will cause the public to direct to the nature and powers of the Coroner's Inquest, will further enhance the utility of their amiable exertions.

As the "Instructions" which I considered it to be my duty to issue to the constables and headboroughs, after having had more than six months of experience in my office, have especially excited the ire of my antagonists, I shall here insert them, and afterwards submit for your consideration the comments on my conduct which have since appeared. The case will then be rendered complete for future argument.

INSTRUCTIONS
FROM THE
CORONER FOR MIDDLESEX.

35, Bedford-square, London,
Sept. 20, 1839.

I HAVE to request that, after the 29th day of the present month of September, 1839, all applications relative to the holding of inquests may be made to me, at 35, Bedford-square, London.

THOMAS WAKLEY, Coroner.

On applying for warrants for the taking of inquests in the Western Division of Middlesex, the constable or beadle is desired to answer such of the following questions as may concern each particular death. The Coroner hopes, therefore, that this list will be carefully kept, so that the necessary answers may be given, whenever application is made for a warrant:—

Questions to be answered when applying for a Warrant.

1. When did the death happen?
2. When was the body found?

3. Was the deceased a male or a female,—an infant, a lunatic, or a pauper?

4. What is thought to have been the cause of death?

5. Is the body in a fresh or in a decomposed state?

6. If it be supposed that poison was the cause of death, what was the poison?

7. If any medical practitioner was in attendance before death, what is his name?

8. If the death was sudden, was there any previous illness, and for what length of time?

9. At what public-house, or other place, is the inquest to be held?

10. How far is the body from that public-house, or other place?

In many cases, answers to a few only of the above questions will be sufficient.

Notice should be given to the Coroner, by Headboroughs, the Police, Parish Constables, and Beadles, in all cases,

When persons die suddenly.

When persons are found dead.

When persons die from any act of violence, or any accident.

When women die during labour, or within a few hours after delivery.

When persons are suspected to have died from the effects of poisons, or quack medicines.

When persons die who appear to have been neglected during sickness, or extreme poverty.

When persons die in confinement, as in prisons, police-offices, or station-houses.

When lunatics, or paupers, die in confinement, whether in public or in private asylums.

These instructions were issued simply to obtain the *best* information which could be procured before warrants were granted to the constables, and to render the inquests, when held, really beneficial to the public and I certainly did not expect that a perusal of those instructions would produce feelings of apprehension or annoyance in the minds of any persons who were desirous of preventing the commission of crime, or of detecting crime after it had been committed. It was, I believe, a rational expectation, but I have been disappointed. I now claim the attention of my readers to the following extracts from a portion of the *respectable* political press of this metropolis:—

From the MORNING HERALD *of Sept.* 30.

WHOLESALE POST-MORTEM EXAMINATIONS.

At an inquest held in the parish of Islington, on Saturday morning, on the body of a man named James Leonard, who died suddenly, Mr. Wakley, M.P., and Coroner, said that he had resolved, as soon as he was a little longer in office, to make it a general rule throughout the western division of Middlesex, to have *post-mortem* examinations in *all cases of sudden death.*

One of the jurors, no doubt an elector of Finsbury, proposed, in order to support the Coroner's determination, that they should at once record in their verdict, their opinion of the necessity of the general adoption of *post-mortem* examinations.

The CORONER *thus fortified by an Islington jury*, said that *he meant instanter to issue an order directing post-mortem examinations in all cases of sudden death that should occur in the aforesaid parish.*

The reporter hopes that he is not overstepping the bounds of his province when he states, from what he has heard and seen, that there is a very strong feeling among the majority of the public against *Mr. Wakley's predilection* for dissecting (many deem it *mangling without reasonable motive*) *the dead bodies of persons on whom he causes inquests to be holden.* His decision, already put in practice, of holding inquests on the bodies of females who have *died in child-birth*, or shortly afterwards, has excited such painful feelings, that it is to be feared that they will find vent in a way by no means pleasant to the medical Member of Parliament and Coroner.

From the OBSERVER *of Sept* 29*th*, 1839.

MR. WAKLEY'S NEW PRACTICE OF INQUESTS.

The law was undoubtedly right in declaring that the payment of a Coroner should be by *fees on each inquest*, so that each Coroner might have the stimulus of interest added to the sense of duty. A strong personal motive to hold inquests was thus given to him to counterbalance the many personal or social motives that might from time to time arise to induce in him an avoidance of the execution of his inquisitorial duty. But when a rule of conduct, however good in itself, is laid down, the possible inconveniences of it, under particular circumstances, are seldom foreseen. It is perfectly true that when a death has been *sudden*, and cannot at once be accounted for, *the law both justifies and requires the interference of the Coroner.* But when a death has happened in the ordinary manner, and in the course of some great and well understood operation of nature, or from illness, during which a person's friends have been summoned around his bed in expectation of danger, the law does not require, we doubt whether it will justify, the invasion of the sanctity of domestic privacy at a time of such acute suffering. The public duty of the Coroner is not called into

existence in such a case. If otherwise, there would be no illness, however long, however well known, to be fatal, that would not require the intervention of the Coroner.

There is certainly *no pretence for instituting a criminal inquiry into a matter of skill.* But Mr. Wakley has just made the convenient discovery that an inquest ought generally to be held where death has followed on *child labour*, because, as he says, medical men often send their young apprentices to attend on such cases. In the first place we utterly deny the slander thus obliquely attempted to be thrown on the medical body. In the next we deny Mr. Wakley's inference from it. For even assuming the slander he has uttered to be true, it would not justify him in holding an inquest unless he could get evidence to show that the medical man knowing the want of skill of his apprentice, and believing that his attendance on the patient would have a fatal result, wilfully sent him to endanger the life of the patient. We repeat that want of skill without a wilful desire to do injury is a subject for *a civil proceeding*. But a Coroner's inquest is a criminal proceeding, and though Mr. Wakley may fancy that a deodand being a sum of money, is in the nature of civil damages, any lawyer, however young in his profession, can prove at once that it is a criminal penalty. Now, if in the event of the verdict being the most unfavourable that Mr. Wakley can expect to obtain against the practitioner, he has no power to do more than express his individual opinion, but cannot take any proceedings upon that opinion; he is not justified in holding the inquest. Mr. Wakley ought to know that an inquest can neither be held for mere pleasure nor his mere profit, nor to enable him to sit in judgment on his brother medicals who are in practice, nor to show off his own surgical learning, nor to give the jurors the trouble of attending, nor to fix on the county an unnecessary expence. The machinery of the law, but especially of the criminal law, is not to be set in motion for any such purpose.

When the death requires to be accounted for, either because of its unexpected suddenness, or because of their being good ground to suspect that criminality to a certain extent exists somewhere, and where criminal proceedings may become necessary, the Coroner is called upon to take an inquest, but where the death is the result of an ordinary illness, where no mystery has been observed, no suspicion of foul play arisen, the Coroner is not entitled to set himself in motion, especially where the verification of his most violent suppositions would not entitle him to do more than state his private opinion of the medical practitioner. Mr. Wakley ought to take legal advice and see whether the constant interference he now proposes to exercise is warranted by the law, or whether if he, without legal cause, summons a jury, the bereaved family thus needlessly distracted at the time of their utmost grief, may not subject him to an action of damages for trespassing upon premises where he has no legal right to come.

From the TIMES *of October 5th, 1839.*

UNNECESSARY INQUESTS.

Yesterday, at the usual weekly meeting of the Marylebone Board of Directors and Guardians of the Poor, held at the workhouse, New-road, Mr. Potter in the chair,

Mr. JOSEPH said he had to call the attention of the board to a subject which, as far as the interests of the public and the expenditure of the county was concerned, was one of great importance. There was a general feeling abroad, and he thought, from what had transpired recently in that parish, justly so, that the Coroner for the Western Division of the county was *exercising undue power* in holding inquests upon persons when it was not at all necessary. As an instance that such was the case, he begged to inform the board, that on Monday last the Coroner came into the infirmary of that workhouse, and held an inquest upon Anthony, the bell-toller, who had been ill several days before, and had clearly died of natural causes. So suddenly was this inquest appointed to be held, and so quietly arranged between the Coroner and beadle, that neither the master of the workhouse, the medical officers of the infirmary, nor any one else connected with the establishment, were made acquainted with it until the jury were actually assembling. He held in his hand a notice, termed "Instructions from the Coroner of Middlesex," which had been circulated amongst all the summoning officers of that division of the county, directing them to answer certain questions relative to each particular death, and also directing "That notice should be given to the Coroner, by headboroughs, the police, parish constables, and beadles, in all cases when persons die suddenly; when persons are found dead; when persons die from any act of violence, or any accident; when women die during labour, or a few hours after delivery; when persons are suspected to have died from the effects of poisons, or quack medicines; when persons die who appear to have been neglected during sickness or extreme poverty; when persons die in confinement, as in prisons, police-offices, or station-houses; and when lunatics or paupers die in confinement, whether in public or private asylums." This latter direction he (Mr. Joseph) had no hesitation in saying was *unnecessary and uncalled for.* If such a principle were for once tolerated, it would have the effect of permitting the inquisitorial office of the Coroner to hold the power of entering into the houses of private families and public institutions in every case of typhus fever, or other disorders to which

the human frame was subject, if death ensued. If this course was permitted to go on, the Coroner might exercise his authority, and enter that house to hold an inquest in every case of death which occurred in the infirmary, doing no good to the public, but taking between 2*l.* and 3*l.* for every inquest out of the pockets of the county. He was not aware whether that board or the vestry was the proper place to bring so important a subject forward, but he conceived it time that some steps should be taken *to check the evil in its bud.* (Hear.)

Mr. POTTER said, since the new act relative to inquests had been passed, allowing the amount of 7*s.* 6*d.* as a fee to the beadles, he had found that they took care no one but themselves knew anything of an inquest being about to be held until the very last moment, and for the sake of gaining the fee given to them by law, they paid no respect to the injury that might be done to private feelings. He would not for a moment infer that the Coroner could be actuated by a similar motive; but he, too, received a fee for every inquest, and, consequently, the more he held the better it was for his own pocket.

Mr. KENSETT said that, in 1837, before the present act was passed, and when the fee received by the beadle was 1*s.*, the amount received by the whole of the beadles of that parish for the year did not exceed 5*l.* 3*s.* But what was the result last year when the new act came into operation? Why, that within the same period of time the beadles realised the sum of 63 guineas. (Hear.) What was better proof than this that unnecessary inquests were held?

Mr. BUSHELL observed, that the parish was paying every one of their beadles 30*s.* per week, and although they were occupying the time for which they were paid by the parish in attending Coroner's inquests, yet they were putting the county to the expense of fees.

Mr. JOSEPH said, unless some steps were taken to put a stop to the principle laid down by Mr. Wakley, it would be opening the door to inquests to an unlimited extent.

Some further observations having been offered, a resolution was ultimately agreed to, to refer the matter to the consideration of the vestry, they being the most competent body to deal with it.

From the TIMES *of October 5th.*

TO THE EDITOR OF THE TIMES.

SIR:—Observing so many more reports in your paper of Coroners' 'Quests by Mr. Wakley, than his predecessor, I am induced to ask you whether the former gentleman *really holds more than Mr. Stirling did*, and whether the Coroner is paid by a fixed salary, or by a fee for every inquest, and every adjournment of an inquest. Our Westminster-hall judges are paid by fixed salaries, for the purpose of preventing even the suspicion of promoting litigation to create fees. Now, I can see no reason whatever for supposing an inferior judge, like a Coroner, less open to the imputation of self-interest than the judges of the land. The loss of one's relation is distressing enough without (unless occasion should absolutely require it) *an additional harrowing of the feelings by the coroner's inquest*, and, perhaps, the application of the knife; and I think it must be admitted that inquests should be held only in cases where there are *grounds for suspicion*, and, above all, that the Coroner should be paid by a fixed salary, sufficiently liberal to induce diligence, and not by fees for each inquest, if such be now the practice.

While on the subject of the office of Coroner, I think it not irrelevant to advert to the propriety of the proceedings of his court being conducted *in a decorous and becoming manner*; and it seems to me to be anything but becoming on the part of a Coroner to speak disparagingly of the *doctrines and judgments of legal authority*, looked up to with respect by those who reverence the laws; for, after all, it will be found that Coroners' inquests must, in the end, be governed by Westminster-hall law; though, for a time, they may have to yield to the crude and undigested notions which each particular tiro of a judge may bring from his dispensary to the conduct of a court of justice, till the precious hochepot into which this same law of his is pounded and mixed works the remedy, in the physicing of its own dispenser.

Again, I will ask, whether it is proper for a Coroner to tell the people in court that there was no inquiry as regarded the death of the nobleman alluded to in the inquest of Wednesday last, because there is one law for the rich and another for the poor,—which is an assertion as false as it is discreditable to the utterer of it. Really these inquests will become a public nuisance, if they are not to be made the instruments for setting the lower against the middle and higher classes.

October 4, 1839. D.

*** Let our correspondent be at ease. If Mr. Wakley persist in *such conduct as he has pursued on some recent inquests*, he will find that the Court of Queen's Bench has the power of cutting his comb very short.

From the OBSERVER *of October 6th.*

THE CORONER FOR MIDDLESEX.

Mr. Wakley has recently issued instructions to head-boroughs, the police, parochial constables, and beadles, that they are to give notice to the Coroner in all cases where persons die suddenly—when persons are found dead, or die from any act or acts of violence—when women die during labour,

or within a few hours after delivery—when persons are suspected to have died from the effects of poisons or quack medicines—when persons die who appear to have been neglected during sickness, or extreme poverty—when persons die in confinement, as in prisons, police offices, or station-houses—and when lunatics or paupers die in confinement, when in public or private asylums, or places where only one is kept.

At an inquest held some short time since on the body of a person who died in the Middlesex hospital, he is reported to have intimated, reports of the cases should be kept in a book, and he would then be content not to call the physicians and surgeons of the institution before him. *He wished for the record of the case, as it was possible that the treatment received in the hospital had as great a share in causing the death as the injury itself had.* Setting aside the *slur thus cast by imputation on the professional knowledge of the hospital medical officers*, the Coroner is not entitled to pronounce *an opinion* on the treatment of the case, but call before him for that purpose a physician or surgeon; inasmuch as the Coroner is the judge, and his duty consists *only in receiving evidence*, and *laying down the law of the case to the jury.* He may examine and cross-examine witnesses, so as to elicit the truth; but he cannot, without committing a grievous fault, *vacate the chair, and pronounce a professional opinion himself.*

In the instructions which he has recently issued, the police and the parish beadles are directed to furnish the Coroner with information of women dying in childbed, or within a few hours after delivery; a task of some difficulty for them to execute, while it *very rarely happens* (except in case of an unqualified practitioner or quack having attended) *that the investigations entered into at a Coroner's Court are required.* It would be strange, indeed, if, as the result of the election of a medical Coroner, the police and beadles are to act as spies on practitioners, and call them before a jury to account for their treatment of their patients. The law holds that practitioners are neither legally nor morally liable, in case of a patient dying while under their hands, if a proper and reasonable degree of *knowledge* and *attention* be given to the case; and although the Coroner and his jury could not of course attach blame in the vast majority of cases that would fall under their notice, yet the publicity that the occurrence would necessarily meet with, and the fact that it had been deemed necessary to hold an inquest, *would not fail to inspire the minds of females with dread*, and render them unwilling to trust themselves in the hands of a person whose previous conduct has been thus marked with suspicion, at the most interesting period of their lives, and when they require the exercise of the greatest care, skill, and attention.

In a case reported in a late number of THE LANCET, an inquest was held on a woman in the neighbourhood of Lisson-grove, who died in a few hours after her accouchement. The evidence of the surgeon who attended her is not *reported*, and it is *fair to presume that he was not summoned.* To Dr. Davis was entrusted the opening of the body, and the responsibility of giving the medical evidence; he consequently received £2 2s. for his services, the cause of death being perfectly natural. Surely this inquest was *unnecessary*, and the *expenses* ought not to be allowed.—*Copied by the "Observer" from a paper written by a Mr. J. Foote.*

From the MORNING ADVERTISER *of October 9th.*

(LEADING ARTICLE.)

* * * Great as is our admiration of the zeal and perseverance of the New Police, greater still is our wonder at the new-born zeal of the Coroner for Middlesex to ascertain the causes of the death of all persons who it may have pleased Providence to deprive suddenly of existence. Verily, a Daniel has come to judgment, and under the not very euphonious or aristocratic name of Wakley! There was a time when men had died, and the breath was out of them, they were *allowed to be conveyed to their last homes*, and their remains to be left *undisturbed.* But the practice, it would seem, was barbarous, and as the bones of horses and cattle are now converted into manure, so, IN FUTURE, *are the last dear remnants of the dead to be converted into a mode of* INCREASING THE FEES OF CORONERS! Who shall now deny that this is not the age of improvement?

From The TIMES *of Oct. 10th.*

In answer to twenty or thirty correspondents who daily address us respecting Mr. Wakley's *vagaries in his capacity* of Coroner, we beg it to be understood that we shall insert only letters which state *facts*, and which are properly authenticated.

From the MORNING HERALD *of Oct. 11th.*

(LEADING ARTICLE.)

At the Middlesex Sessions yesterday, certain claims for expenses were *preferred by Mr. Wakley* in his capacity as Coroner, and *refused by the Court.* Not merely were the honourable gentleman's fees refused, but sundry hints were dropped on the subject of *the Coroner's liability to indictment, and to removal by the Lord Chancellor.*

We are not disposed to deny that preceding Coroners may, perhaps, have exhibited a lack of energy in the discharge of their important functions; but *excessive zeal*, on

the other hand, may give rise to evils quite as formidable as those which originate in supineness. Mr. Wakley is somewhat fussy and peremptory in the exercise of his duties, and he entertains a somewhat exaggerated opinion, as to the importance of Coroners, to the rest of the community. Let him abate his *devouring zeal;* let him temper his *flaming enthusiasm;* let him believe that "Coroner's quest Law" is not the *only law* that exerts its influence throughout the universe; let him understand that the course of nature runs no risk of suspension, even if Coroners' Courts should cease to command the reverence of mankind. Let Mr. Wakley ponder these *great truths*—and let him, moreover, avoid imparting to his "progresses," as Coroner, the *semblance of electioneering visits*—and the result will, we venture to predict, be beneficial at once to Mr. Wakley and the public!

From the MORNING HERALD *of October* 12*th*.

MR. WAKLEY AND THE MARYLEBONE VESTRY.

It will be recollected by our readers that the recent discussion, on the conduct of Mr. Wakley, with respect to holding unnecessary inquests, commenced with the veritable Messrs. Joseph Kensett and Potter, the oracles of the Marylebone parliament. It has ocasionally happened that wrong-headed people sometimes get, by mere accident, to be on the right side of a question, and thus it was with these worthies in the instance adverted to. With a laudable desire, however, to be consistent, and always wrong, they no sooner found that public opinion proclaimed them to be right, than they immediately disclaimed their previously announced opinions, and lo! instead of censuring Mr. Wakley, as before, they profess to wonder that their attacks upon him should be considered as censures, and forthwith pass the following resolution:—

"That this Board regret that any statement emanating from them should have appeared in the public prints, having a tendency to disparage the conduct of Thomas Wakley, Esq., coroner for this division of the county; the remarks were intended to apply solely to the unauthorised conduct of the summoning officers; this Board have no hesitation in expressing their approbation of the conduct of the Coroner, and their entire confidence in the zeal and ability displayed by him in the discharge of the onerous duties of his office."

We should not be much surprised to find them, at their next meeting, disclaiming this resolution also, and lauding the unhappy beadle in a similar strain, although they have now thought proper to make him the scape-goat for the Coroner.

From the MORNING HERALD *of Oct.* 12*th*, 1839.

To CORRESPONDENTS.—We will endeavour to make room for the letter of "A HUSBAND AND A FATHER" in our next, with some slight modifications of his inferences touching the L.S.D. Many folks are very positive that our new and vigorous Coroner is not actuated by pence, but by *pure popularity*.

To the Editor of the MORNING HERALD.

SIR;—Will any of the readers of your paper oblige me by saying if the present Coroner, Mr. Wakley, M.P., &c., *be or be not paid* for every *adjourned* inquest. I am, Sir,

A RATE-PAYER OF MIDDLESEX.

From the MORNING HERALD *of October* 15*th*.

THE CORONER ON HIS CANVASS.

Every body knows that great latitude, both of saying and doing, is allowed to a candidate seeking the suffrages of electors—that, in fact, he has free license, for the nonce, to assume the cap and bells, and play any kind of fantastic tricks that may seem best calculated to propitiate the sweet voices of the "most thinking people." This, it is presumed, must be Mr. Coroner Wakley's apology for his recent edifying exhibitions before the enlightened "Questmen." He is notorious for keeping a good look-out a-head, and, as he doubtless perceives a general election in the distance, he considers himself perfectly justified in commencing an early canvass of his borough; and to do this with effect, he *resolves on combining his electioneering with his official labours*—converting, in fact, *his Coroner's court into a district committee pro tem.* Accordingly, the usually sombre deliberations on the remains of the defunct are relieved by the lighter sallies and the rhetorical stratagems and tricks incidental to the spirit-stirring canvass of the living. *This is the secret of all Mr. Wakley's palaver.* It all tends to *the hustings.* Hear a few of his *dicta*, the outpourings of the wisdom of the learned legislator of Finsbury.

"The truth is, that the shoe is now beginning to pinch *certain persons*, and persons in authority, who had been, and wished to continue to be, free from observation and controul, were becoming apprehensive of the prospect of having the attention of the public directed to their conduct—(cries of 'hear, hear,' from the learned jurymen).

"It happened that the Coroner was a judge elected by the people, and the only one elected by the people, and some persons did not like a lawyer, &c.

"There were some judges, even some very celebrated judges, as ignorant of the law respecting the duties of Coroner, as any

saddler or harness-maker, or smith, or labourer, who had never read a word about it"—(the jury was, no doubt, composed of saddlers, harness-makers, smiths, and labourers, and they all in an ecstacy of delight cried "hear, hear"). "The truth was, the office of Coroner rose from the people; it was instituted for the protection of the people. The Coroner, himself, was appointed by the people, and it was *his duty to watch over and protect the interests of the people.*"

This villanous iteration about "the people," "the people," "the people," has very little to do with the "Crowner's quest," but it has a vast deal to do with the next election for Finsbury. It is as much as to say, "I, Thomas Wakley, am an out-and-out Radical. Your vote and interest are respectfully requested." His fierce declarations of war against judges and magistrates, and "such *small* deer"—his letters missive to dignified beadles—his assumption of the mattock and spade of the gravedigger—and, more than all (*horrescimus referentes*), his vows of vengeance against the press—are mere mock heroics, *ad captandum* flings thrown out, with tongue i' the cheek, as baits to catch the stupid gudgeons of Finsbury. It would be as well, however, if this M.P. and M.C. were not quite so oblivious on Monday of what he has uttered on Friday. On Friday last he sneered at "certain persons who were apprehensive of the prospect of having the attention of the public directed to their conduct," and, on Monday, we find him threatening to close *his* court against the public press. "Does the shoe begin to pinch?" Is Mr. Thomas Wakley, the "friend of the people," and the foe of judges and magistrates, "becoming apprehensive of the prospect of having the attention of the public directed" to *his* conduct? Verily this cantankerous Coroner will be the death of some of us. He will "close his court," will he? What would he say, what would he do, were the newspapers to close their columns against *him*?—*From a Correspondent.*

From the MORNING ADVERTISER *of October 17th.*

(*LEADING ARTICLE.*)

"Crowner's 'quest law," notwithstanding the lucid exposition of it by the gravedigger in *Hamlet*, appears, from the recent observations of Messrs. Wakley and Baker, still destined to engage the attention of those officially interested in the dead. Inquests are a most valuable institution, but, like all others, are open to abuse, and therefore every precaution should be taken against their being brought, by any *undue practices*, into public disrepute. Where outrages against the person are so frequent as at the present time, it is particularly desirable that no impediments should be thrown in the way of inquests, where there exists the slightest grounds to suspect death to have been caused by unfair agencies; but, at the same time, the feelings of surviving relatives should be respected, and nothing would tend more to excite public feeling against the general practice of inquests, than holding them *unnecessarily*, or subjecting the deceased to *post-mortem examination, not called for by the circumstances of the case.* Expense in a matter of this kind is a matter of such comparative insignificant consideration to the public as scarcely to deserve any place in the discussion. Better that the Coroner should have a dozen extra fees, than that one doubtful case should escape a thorough investigation; but *unless* in cases where death may fairly be doubted to have arisen from natural causes, we protest against *intrusion on family privacy*, or the body of the deceased being exposed to the ordeal of the scalpel. It is a foolish prejudice which prompts the objection to post-mortem examinations; but it is one so closely interwoven with man's nature, as to deserve respect, unless when its violation may tend to some positive good. We may say that all our feelings, as to the disposal of the dead, are void of any philosophical foundation. However the body may be disposed of, we cannot follow nor reflect upon its destination with any satisfaction. It may be buried, and it becomes food for worms, or it may be burned, and become "compounded with the dust whereto it is kin;" but in no way can its contemplation be divested of painful associations to the survivors. Therefore, we see no substantial reasons against making, whenever it can be done, the dead available to the good of the living. But we see a great many reasons against *encouraging Coroners to hold inquests*, and *institute examinations*, which are attended with expense to the public, and pain to private feelings, without even the remotest possibility of any result excepting certain cyphers transferred to the account of "Coroner and Co.," under the head of those favourite capitals, £. *S. D.*

From the TIMES *of Oct. 26th.*

To CORRESPONDENTS.—If a person named Fisher has applied to Mr. Wakley, as from this journal, to learn when or where the *eccentric Coroner* holds his inquests, that person has done so without any authority from us. We are quite sure that it would be *better for public decency*, though we fear *not for public justice*, if Mr. Wakley's inquests were never reported at all. The *concealment*, however, which he is attempting to practice, is a capital illustration of the notions which *the party to which he belongs* entertain of *purity* in legal proceedings.

The foregoing quotations exceed in length the space which I had calculated they would occupy. It is right, however, that the venom of my anonymous maligners should be collected, and brought into *one view*. Every person can now perceive the nature of the weapons which have been directed against me, and it is equally easy to comprehend the quality of the motives which have actuated my *nameless* and *concealed* assailants.

But although the *extracts* already occupy so many columns, I must add another to the series. That one, however, points directly to the assassin-like character of the masked writers by whom my conduct has been so unblushingly misrepresented. The allegations and insinuations which I have placed before you, sustain, throughout, in their leading features, a close resemblance. In only a single instance has any commentator on my conduct who was not present at an inquest, referred to a specific grievance,* and in that case the writer has proved himself to be such an incomprehensible blockhead, that it is difficult to deal with him, from his astounding stupidity and assinine ignorance. He will, however, by and by, be made to take *his turn* with the rest of my assailants, and submit to a salutary flagellation.

In exhibiting to you, and to the public, the nature of the opposition which I have encountered, I hope to succeed in clearing the ground for a fair argumentative contest relative to the powers which the Coroner *can* and ought to be enabled to exercise, with reference to the functions of his office. Had I entered upon this discussion without satisfying you how grossly my conduct had been misrepresented,—without fully exposing to you the motives of my antagonists,—I must have failed, if not in securing your attention, at least in obtaining for my statements and opinions the consideration of the community. I have reason to rejoice that I can publish these letters in THE LANCET; that I can in this journal hold up to the scorn and reprobation of every honest man, the mode of attack which has been adopted against me by a *respectable* portion of the political press. In addressing myself to the MEMBERS OF THE MEDICAL PROFESSION, I know that my refutation of the falsehoods which have been circulated, must very shortly reach every rank and class of society. There is not a town in this kingdom where THE LANCET is not read; there is not a mansion wherein the most useful portion of its contents is not communicated, in course of time, by some one or other of the 25,000 influential members of the medical body.

If, then, I allow the ungenerous insinuations of my calumniators to inflict upon the office in which I have the honour to preside, or upon myself, any *permanent* injury, it must be from inattention, or indifference on my part, or from neglecting to employ that branch of the press which is at my own disposal. That I ought to wield such an instrument of defence, is rendered sufficiently evident by the contents of the paragraphs which I have extracted from the journals of my adversaries. If even one doubt of this necessity still remains in the mind of a single impartial or candid person, I would entreat of him to reflect for a moment on the nature of the additional extracts which I have promised to introduce. They stamp with infamy the character of a newspaper which could be made the vehicle of such a proceeding. At a time when the full tide of slanderous insinuation had been opened upon me, the following letter, was printed in the *Morning Herald* of the 12th inst:—

To the Editor of the MORNING HERALD.

——Hæc illa est misericordia.

Mr. Editor,—Mr. Wakley appears to have ignorantly imagined that the words* "suddenly dead" which occur in the statute *De Officio Coronatoris* has given him authority to interfere in *all* cases of sudden death. But

* See conclusion of remarks by "J. Foote," page 209.

* The statute above referred to states that the Coroner is to go to the place where any person is slain or suddenly dead, and shall by *his* warrant (not the beadle's summons) to the bailiffs, constables, &c., summon a jury, &c.—T. E. T.

these words "suddenly dead" have been decided (see 11 East, 229) not to apply to cases where death has been produced by natural causes, and, therefore, the bodies of persons dying of apoplexy, fever, or any other acute disorder, are not to be submitted to the examination of a jury.

The practice certainly is in populous districts for the beadle to exercise *his* "discretion" of acquainting the Coroner and summoning the jury, so that many times the Coroner is called upon to attend an inquest which has been got up for the sake of securing a fee. In one late case at Islington, where a family was most unjustly subjected to this annoyance, and where, from the examination of a surgeon who attended upon the beadle's summons, it appeared (indeed it was notorious) that the cause of death was perfectly natural, I requested the Coroner to discharge the jury, as it was very evident that he had no jurisdiction to interfere, indeed, the verdict itself would demonstrate that he had attended where he had neither business nor authority; but the question of fees, which depended on the production of an inquisition, had too much weight, and I was significantly reminded of a Coroner's power to commit, &c., although I attended in the capacity of attorney for the family so intruded upon. I am, Sir, yours, &c.,

T. E. TOMLINS, Attorney.

Islington, Oct. 11, 1839.

When the newspaper containing the above letter was put into my hands, I at once declared that the signature of T. E. TOMLINS must be a forgery,—that I had not at any time seen such a person,—and that I had never met with the slightest obstacle from any attorney, or any lawyer, at any inquest. The reflection on my official conduct, thus authenticated with the name of a member of a most respectable profession, was severe. Still, the letter had this heading, in large capitals, "MR. WAKLEY'S CORONERSHIP." The first words in the letter were, "Mr. WAKLEY appears," and in the last paragraph it is stated that "in one LATE "case at Islington a family was most un-"justly subjected to annoyance."

After attentively considering the subject, and reflecting on what had occurred at the whole of my inquests in Islington, I was compelled to conclude that the document was a forgery, and deemed its contents to be so many additions to the "lies of the day."

Three days after the publication of this letter, my attention was called to the following "NOTICE TO CORRESPONDENTS," in the *Morning Herald* of the 16th inst.—

"TO CORRESPONDENTS.

"Mr. Tubbs, the beadle, must write in a "less furious tone, and confine himself to "his own defence, if he wishes us to 'place "the matter in the hands of a discerning "public.' Mr. Tubbs may depend upon it "that Mr. Wakley has quite enough to say "for himself, without Mr. Tubbs's assist-"ance."

This announcement led me to believe that Mr. TUBBS, who is the constable of Islington, a tradesman of respectability, and a most intelligent, excellent, and active officer, had replied to the letter of T. E. TOMLINS; and I also necessarily inferred that his communication had really been excluded from the newspaper, in consequence of its "furiousness," and its libellous tendency; presuming, at the same time, that no just ground of condemnation existed against the editor for declining its insertion. At the same time the contents of the *Morning Herald*, with reference to my own proceedings, might have warranted, on my part, a far different conclusion.

A few days subsequently to the publication of this "Notice," I attended at Islington, to hold an inquest, when, at the conclusion of the proceedings, Mr. TUBBS said to me,

"I sent a letter, Sir, to the *Morning* "*Herald*, the other day, in answer to the "communication of Mr. Tomlins; but "Grandmamma* said she could not insert it, "because I was so furious. Here is a copy "of the letter which I forwarded to the old "lady."

The surprise and indignation of the reader on perusing this document, will furnish him with the best index to what were my own feelings after I had become acquainted with its contents. Here, then, is

* "GRANDMAMMA"—A name by which this paper is known in every reading-room in London. The stupidity and insipidity of its contents have long obtained for it this very significant title.

conclusive evidence as to the conduct of the *Morning Herald*, and *ex uno disce omnes*. Let it be remembered that the letter of TOMLINS was headed, "MR. WAKLEY'S Coronership;" that the *first words* of the letter again exhibited my name; that the writer referred to a "LATE inquest at Islington," and, finally, that the reason alleged by the Editor for not inserting the letter of Mr. TUBBS, was the furious tone in which it was written. Now for the inadmissible, *violent* production:—

"MR. WAKLEY AND THE CORONERSHIP.

To the Editor of the MORNING HERALD.

"SIR:—A statement having appeared in your paper of the 12th Oct., 1839, signed 'T. E. TOMLINS,' pretending to set forth the particulars of an inquest held at Islington 'LATELY,' wherein the writer appears to distort the truth in order that he may, with greater facility, follow in the wake of those persons who have made it their business to misrepresent and impugn the conduct of Mr. Wakley as Coroner, I take the liberty of sending a statement of the facts of the case, your insertion of which will much oblige me.

"A young man called at my house on or about the 28th April, 1838, and stated that a woman was lying dead at Cambridge-terrace, Lower-road, whose death had been hastened (if not occasioned) by starvation, at the hands of his (my informant's) own mother, who had been several years housekeeper to the deceased. As he repeated his visit, I deemed the case worthy of inquiry, and, on proceeding to the house, was immediately referred, by the housekeeper, to the medical gentleman.

"On the jury assembling together, a lawyer attended, for the purpose of preventing an inquest being held; but Mr. Bell, the Coroner's Clerk, told him that he had no doubt that before the inquiry terminated, he would be convinced of the necessity for its being instituted, and, from the evidence given, it appeared that the report of the deceased having been starved to death had been so industriously circulated (by a party who was disappointed in a pecuniary point of view) that, on the verdict being delivered, *the lawyer himself expressed his entire satisfaction at the manner in which the inquest had been conducted, and, also, of the propriety of its being held!*

The writer of the letter appears to endeavour to affix a stigma on me, that I summon unnecessary inquests, merely for the purpose of securing a fee. I beg to state that for a period of *six weeks* during the last summer, *no* inquest was held in the parish of Islington, which contains a population of 50,000 souls.

Leaving the matter in the hands of the public, to decide whether the lawyer or myself obtained a fee unnecessarily, in the case in question, I remain, &c. &c.,

R. T. Tubbs, Beadle of Islington.

P.S. *I need scarcely add that* Mr. STIRLING *was Coroner on the occasion, and* NOT Mr. WAKLEY, *as the date will show.*

So that the "LATE inquest at Islington" was held by Mr. STIRLING, TEN MONTHS BEFORE I WAS ELECTED TO THE OFFICE OF CORONER!

Were I to write until doom's-day, I could not add to the effect which this disclosure relative to the conduct of TOMLINS and his abettor, the Editor of the *Morning Herald*, must produce in the mind of every candid and intelligent person. Although the letter was headed with my name—although the whole of its contents appeared to refer distinctly and positively to an inquest which I had held,—yet a refutation of the gross and scandalous calumnies was denied insertion in the columns of the journal which contained the falsehoods,—a refutation which all must acknowledge was couched in the most proper, decorous, and respectful language. I trust that the infamy of this proceeding has no precedent in the history of the *respectable* portion of the press of this metropolis.

In placing before you, at one view, the mean and malicious insinuations of a portion of the press, and in rendering complete the exposure of the conduct of the Editor of the *Morning Herald* and TOMLINS OF ISLINGTON, my object in framing my present communication is accomplished. Henceforth, it may not be in the power of such an EDITOR, and such a LAWYER, to inflict an injury upon

the character of any person; and thousands will exclaim, with fervent sincerity,

"O! Heaven, that such companions thou'ldst unfold,
And put in every honest hand a whip,
To lash the rascals naked through the world."

I have the honour to be,

Gentlemen,

Your faithful and obedient servant,

THOMAS WAKLEY.

WOMEN DYING DURING LABOUR,

OR WITHIN A FEW HOURS AFTER DELIVERY.

To the Editor of THE LANCET.

SIR:—The following cases of death occurring subsequently to parturition, within a few months of each other, serve to illustrate but too painfully, the calamitous effects arising out of a system which allows ignorant and unqualified persons to engage in the practice of midwifery. It is astonishing that the reckless sacrifice of human life, so constantly happening in connection with this great evil, has hitherto failed to occupy the share of public attention which it demands. It is true that, for many years, your excellent journal has humanely pleaded for a more efficient medical attendance on the sick poor, but every effort has, hitherto to a great extent, proved unavailing. Every case of death occurring under circumstances such as I am about to detail, should be brought before the public, in the expectation, that by the constant statement of facts, the legislature will, ere long, be led to see the necessity of interference.

CASE 1.—Mary Anne Dodd, aged 23, of the parish of Kirkly, was taken in labour on Tuesday, 23rd of April, at six o'clock in the morning. A midwife residing near, was sent for, and remained with the patient until three o'clock in the afternoon, when the birth of a full-grown living fœtus took place. The presentation was described as being natural. Nothing remarkable occurred until half an hour afterwards, when an attempt was made to extract the placenta. Flooding quickly followed, and was allowed to go on uninterruptedly, more or less, till nearly six o'clock in the evening. At this crisis a medical gentleman from Lowestoft was requested to attend. On entering the apartment, he observed the floor to be deluged with blood, and the patient herself under the influence of entire collapse. The countenance was blanched, the pulse scarcely perceptible, the respiration hurried, and the surface cold; with every other indication of speedy approaching dissolution. The finger, when introduced per vaginam, discovered the funis to be detached, and the placenta imprisoned in the womb.

In less than an hour death supervened.

A vague report having been circulated that death took place from want of a proper supply of nourishment, the parish authorities deemed it advisable to have an inquest held on the body. On the following morning, I was requested to make a post-mortem examination, which took place in the presence of several other practitioners.

On opening the abdominal cavity, the uterus presented itself, large, and widely dilated. Scarcely any degree of contraction had taken place; no coagula were found within its cavity. The funis had been torn from its point of insertion, and one edge of the placental mass detached. The cervix was lacerated, which appeared to have been accomplished by the forcible introduction of the hand or fingers.

The jury consisted of men devoid of education and intelligence; and, when requested by the Coroner to sign their names, nearly two-thirds of them avowed their incapability of writing. Verdict—"DIED OF UTERINE HÆMORRHAGE, AND NOTHING ELSE."

CASE 2.—Sarah Smith, aged 45, living in the town of Lowestoft, was pregnant with her eleventh child. Labour pains commenced on the morning of the 26th day of August, when Mrs. Cully, a midwife, was sent for to attend her. The birth of the child did not take place until two o'clock on the next day, during the whole of which time the midwife remained in attendance. The presentation was represented as being natural, and the placenta followed in about an hour after the expulsion of the child. Three hours subsequent to delivery, the patient became extremely faint, and it was not until then that the midwife entertained any alarm for her safety; although there can be no doubt that hæmorrhage had been going on for some time previously. A messenger was despatched for medical assistance. As I was from home at the time, I could not go to the patient's house until an hour afterwards. On entering, I was informed that another medical gentleman had promptly attended, but was too late to be of any assistance, death having taken place five minutes after his arrival.

On the next morning I obtained permission to inspect the body. The uterus was situated without the cavity of the pelvis, nearly as high as the epigastrium. It was of an oblong shape, uncontracted, and free from coagula. Upon pushing it towards the left side, a sanguineous effusion was observed between the folds of the peritoneum, constituting the lateral ligament of the uterus, which could not at the time be satisfactorily accounted for. Thinking it probable that the effusion might have emanated from the right spermatic vein, this vessel was carefully traced, without any lesion being discoverable. The uterus having been removed, was conveyed to my own house, and carefully examined by my-

self and the other practitioners in the town. On slitting up the vagina, a laceration presented itself exceeding, in size a crown piece, occupying the right side, just below the cervix, penetrating nearly into the cavity of the pelvis, and was found to have given rise to the extravasation observed on opening the body. Marks of contusion and extravasation were to be seen about the cervix, and immediately contiguous were several incisions of a semilunar form, their convexity looking upwards, and so exactly corresponding in shape to the sharp edge of the finger nail, as left no doubt in the mind of every one present that these, together with the laceration, must have been effected by the rude and forcible action of the nail and finger upon the inner surface of the vagina. Several lacerated vessels, as large as a moderately sized crowquill, were exposed, which must necessarily have given rise to bleeding anterior to delivery. The exhaustion arising from loss of blood, together with the extreme pain and irritation of so cruel and protracted a process, could not fail to produce inertia of the uterus. To this circumstance may principally be ascribed the fatal hæmorrhage which followed.

No inquest was held. A husband and eleven children were left to mourn over the unhappy destiny of this poor woman.

I have especially been induced to transmit the above cases for publication, because they bear, in a very remarkable manner, on the subject of the "Instructions" lately issued by you; that in every case of sudden death happening after child-birth, *an inquiry should be instituted as to the precise cause*. Some individuals of the profession, I regret to learn, have started objections to this measure on the ground of its inquisitorial character.* This, surely, is a great misconception. That death will, and does, occasionally happen in connection with the puerperal state, even under the most judicious and skilful management, no one can deny. Yet I apprehend no respectable and inquiring practitioner, when placed under such circumstances, could conscientiously object to any measure having for its object the further elucidation of the exact causes of death. On the other hand, where death has been supposed to have arisen through ignorance, concealment of the facts must have an injurious influence on society. In support of the above remark, it is very apparent that in Sarah Smith's case, had not a post-mortem examination taken place, death would have been attributed exclusively to uterine hæmorrhage, without any reference whatever to the injury discovered to have been inflicted upon the uterine organs. I remain, Sir, your obedient servant,

W. C. Worthington.

Lowestoft, Oct. 23, 1839.

* In another part of this journal we have inserted a copy of the "Instructions" alluded to by our correspondent; and shall, in due time, make some observations on the subject of inquests on women dying during labour, or within a few hours after delivery.—Ed. L.

UNIVERSITY COLLEGE HOSPITAL.

CONTRACTION OF THE KNEE JOINT AND OF THE TENDO ACHILLES.—OPERATION.

A little girl, about seven years of age, suffering under contraction of the knee joint and of the tendo Achilles, was brought into the theatre, for the purpose of having the ham-strings and tendo Achilles divided. The operation, which was effected by means of a very small instrument, something resembling an acupuncture needle, was easily and speedily performed. The punctures were exceedingly small, and no blood was lost. Mr. Liston stated that the contraction had arisen during teething, and it was therefore, not likely to be entirely removed by operation; with the assistance of the instrument-maker, however, much benefit to the patient could be effected. The operation, as the students saw, was exceedingly simple, and caused little pain, indeed, it was something like "tickling" through the tendon. A variety of cases of this description had been operated upon in the wards with good success; it was astonishing that any individuals should have attempted to monopolize this operation, considering its great simplicity, and that any competent surgeon could perform it with the greatest possible ease and safety.

CORRESPONDENTS.

A Medical Student, Bristol, should have authenticated his statement respecting the medical schools. We can, therefore, only reply generally to his question, "Are the lectures delivered at an openly advertised medical school, public," that they are not *necessarily* public. The refusal to admit certain auditors may be legally enforceable. The question of "illiberality" is altogether another matter.

Communications have been received from *A Student*, *Medicus*, *Obstetricus*, and *Z*.

The letter of *A Constant Reader* would only create a controversy.